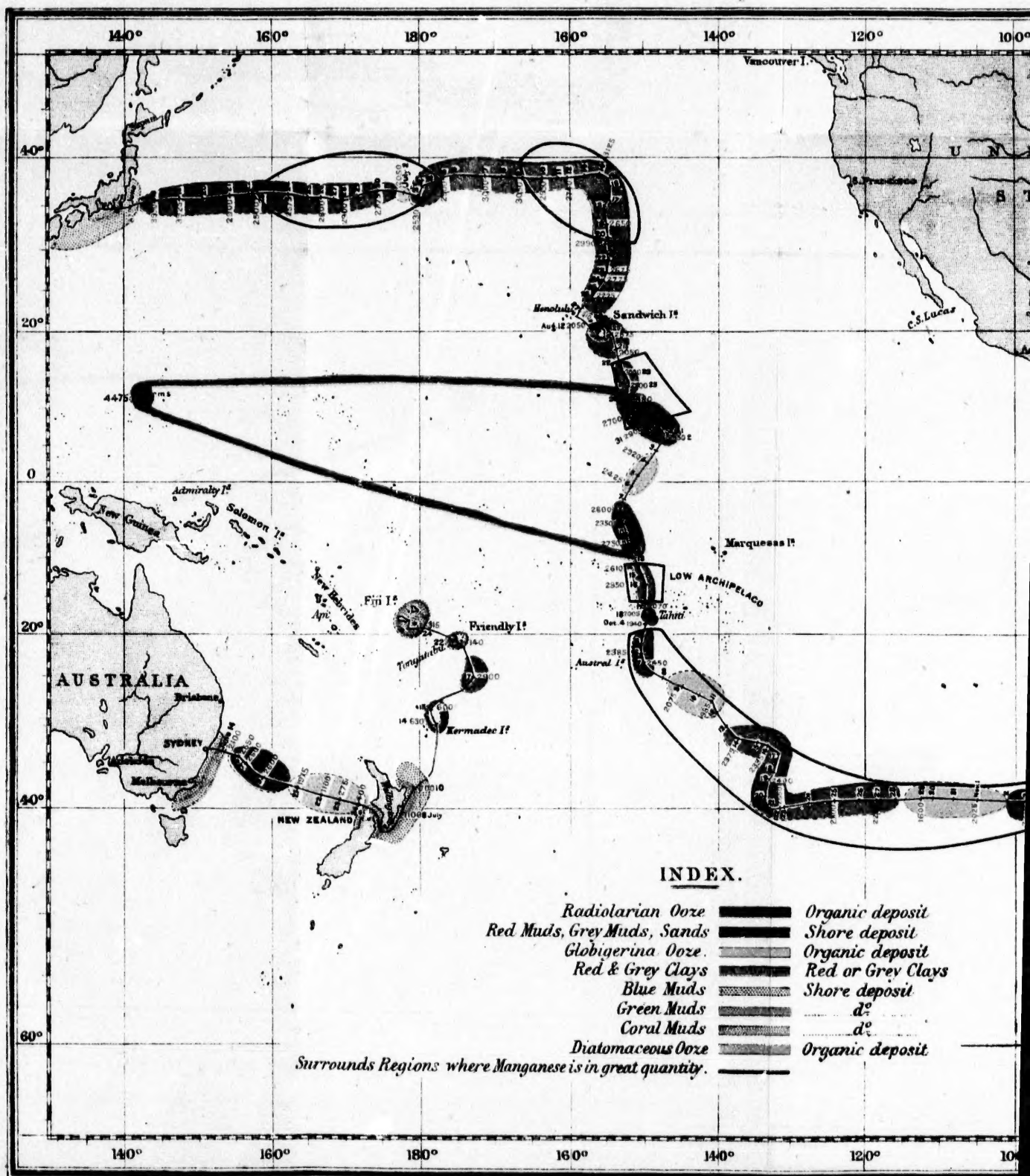
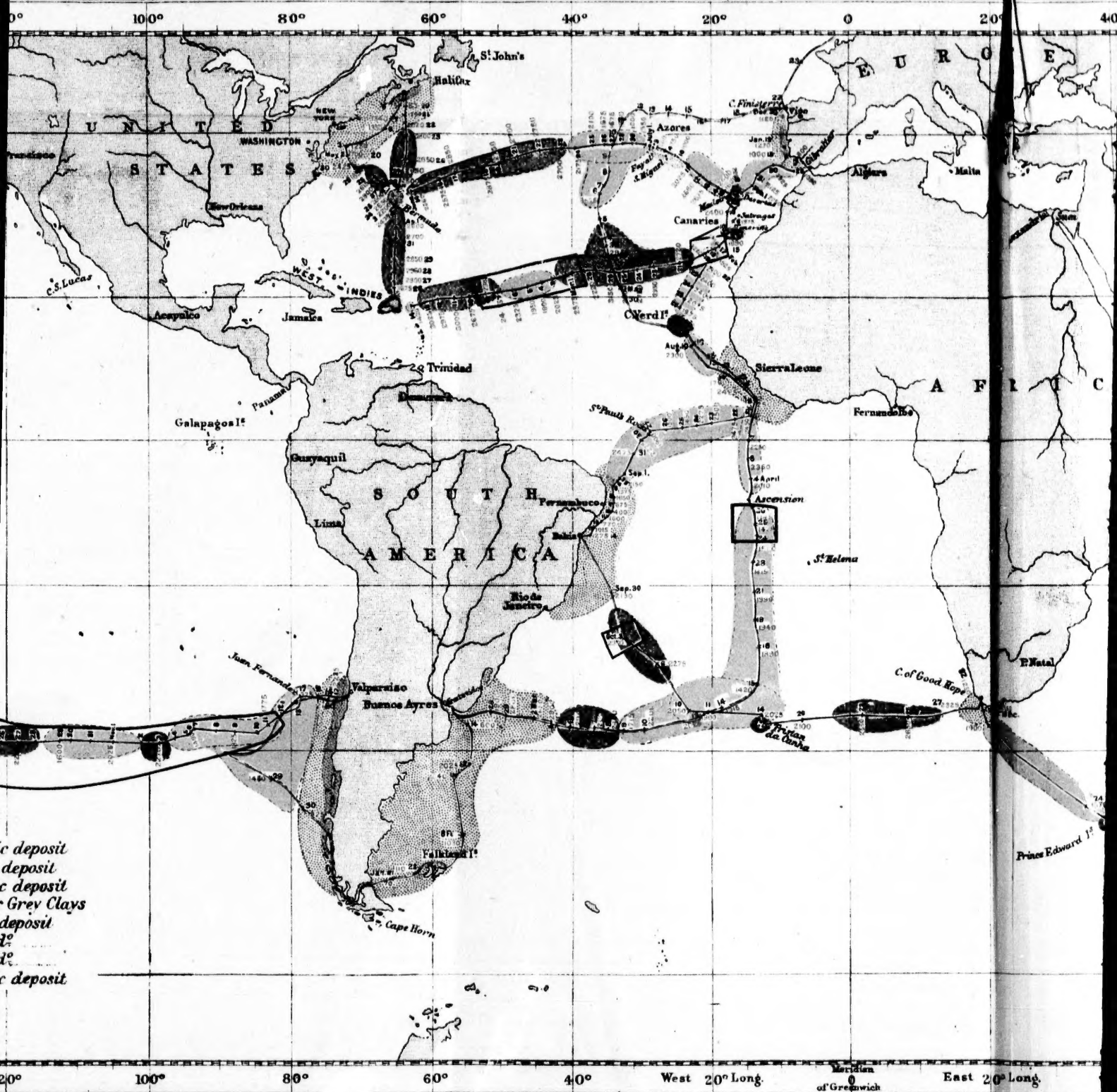
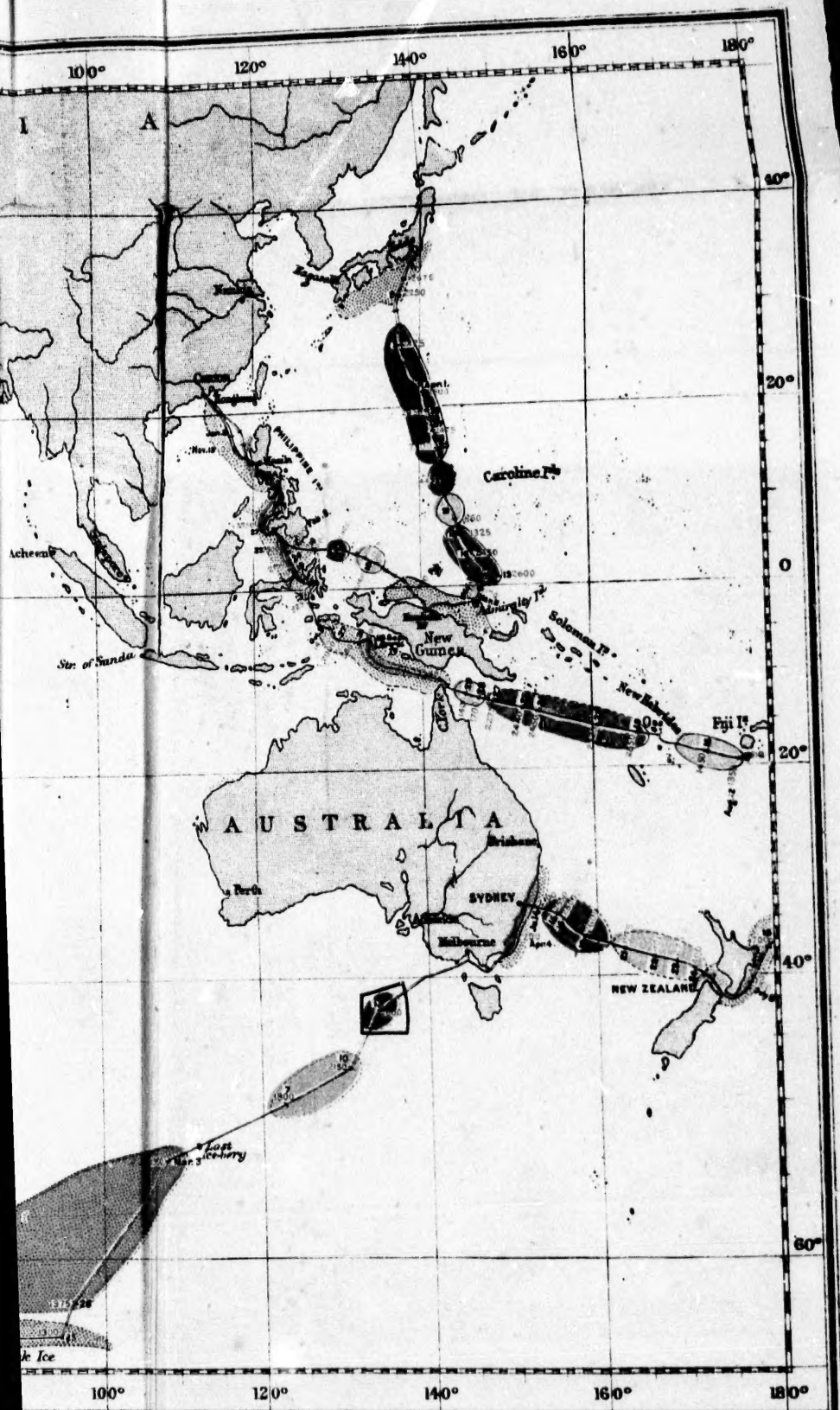
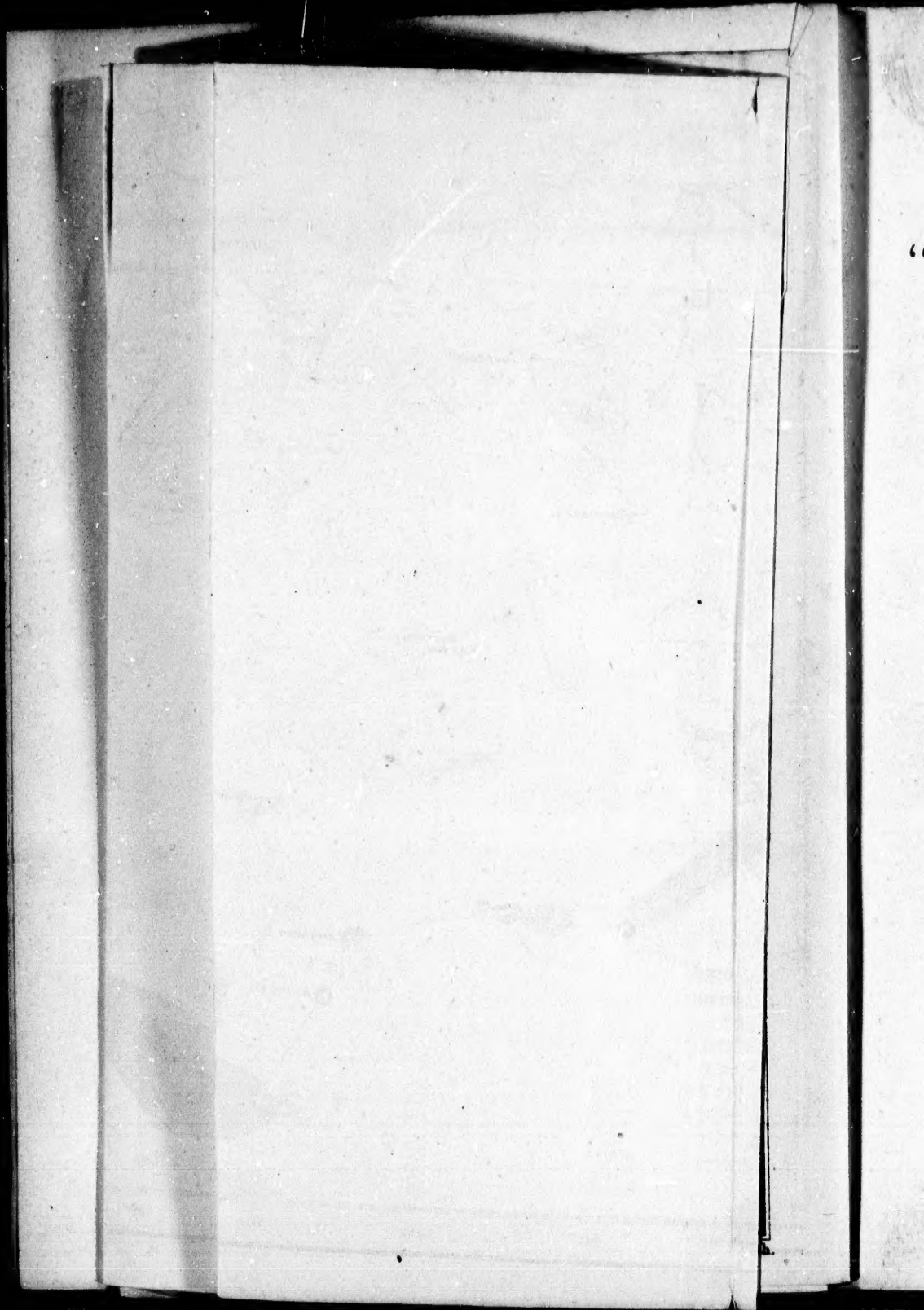






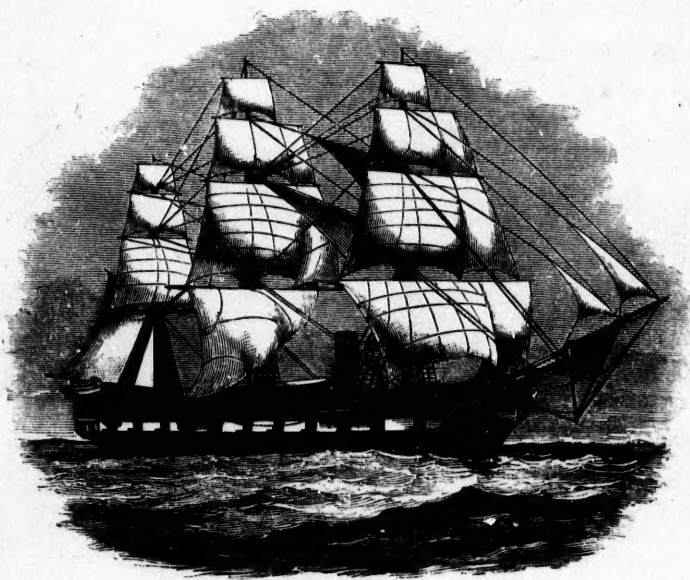






LOG-LETTERS
FROM
"THE CHALLENGER."

BY
LORD GEORGE CAMPBELL.



FIFTH AND CHEAPER EDITION, REVISED.

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1877.

R. CLAY, SONS, AND TAYLOR,
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THESE Letters—extracted from my Log—were written home during our cruise with no intention of publication. They are, I am well aware, exceedingly rough in style and language, but I have thought it best to leave them—rounding off only the most ear-breaking angularities—as they were written. Such as they are I hope they will give the reader a general idea of the *Challenger's* cruise—a cruise which will rank as famous in the Annals of Science.

In this edition I have, I hope, knocked off a few more angularities, and added some additional notes.

The map originally appeared in the *Royal Society's Proceedings*, illustrating a paper written by Mr. Murray on Oceanic Deposits. For its reproduction here I have obtained the kind permission of the Royal Society's Council.

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LOG-LETTERS FROM THE "CHALLENGER."

CHAPTER I.

ENGLAND TO THE CAPE.

Dec. 21st, 1872.—At length we are ready, the last packing-case of science on board, the last good-bye said, the last hawser cast off, a tug tows our bows round, "Full speed ahead!" and hurrah! we are off on our cruise round the world. We steam out of Portsmouth Harbour, through the "Needles," and down Channel with a smooth sea and a light head wind, not long to last though, for in two days' time we got a heavy gale, which shook us all nicely down into our places; close-reefed topsails—ship rolling like mad—sleep at a minimum—scientifics sick—stand up meals—crockery smashing—perfect misery—attempted joviality, &c. And so with a persistent foul wind, blowing sometimes very hard, and sometimes lighter again, and with until the last day or two a heavy, confused sea and swell, we joggled uncomfortably on, now beating about under sail, and now steaming head to wind, until Jan. the 3rd, when we arrived at Lisbon.

Our tentative dredging labours can so far hardly be called successful, but "experience teaches," and doubtless we shall soon become first-class dredgers. We commenced by a sounding in 1,125 fms.; but the line, when being hauled

in, parted, and away went the afore-mentioned length of rope, a thermometer, and a sounding-machine. And then we put the dredge over, which came back upside down, and the last fifty fathoms of rope in a hopeless tangle; so over it went again, coming up all right next time, with some starfish, one fish, and a shrimp—all very rare indeed! Everybody, officers and men, came on deck to see it come in, and there was much excitement, though a cynical whisper *did* go round that we should have plenty of time and practice to lose this excitement before we had finished the cruise. Then again we lost a sounding-line in 900 fms., the dredge coming up empty too; and yet once again, in deeper water, we lost sounding-line, thermometers, &c., and this time the dredge also with 2,500 fms. of dredge-rope.

We stayed at Lisbon till the 12th, having been detained by such cloudy wet weather that the necessary "sights" for rating chronometers could not be taken. The King and suite paid us a visit, and were much interested in things scientific. Two of us drove to Cintra on a disagreeable day, thick mist hanging over the country with occasional showers. Our driver was much too fond of getting wet inside; to make up, doubtless, for his getting wet outside. The scenery is neither pretty nor interesting—brown fields between high stone dykes, and dilapidated windmills on the round bare hilltops. Fine houses fringe the town of Lisbon, with orange-trees laden with fruit in the gardens.

Arriving at Cintra after a three hours' drive, we alighted at a nice little English hotel, and went for a stroll: a heavy mist hanging over the hills, and dampness paramount in the air. Lovely roads through old cork-tree woods, full of beautiful ferns, and ivy, and green shrubbery. An ominous drip, drip we heard from our beds next morning, and our fears were painfully confirmed by seeing heavy rain, and yesterday's mist still hanging about. But breakfast cheered us, and soon the weather did clear up a little, gleams of sunshine flooded occasionally the lower

land, and the mist stole slowly upwards and past us. And so we mounted our donkeys (Cintra donkeys are famous, and, accompanied by a guide walking, rode off, first going to the famous villa of Mr. Cook, in whose exquisite garden we strolled about for a long time. It is a paradise of vegetation, palms, tree-ferns, and pines, among waterfalls, rockeries, and grottos—an enchanting place! Then up the hills to the "Cork Convent," the mist gradually becoming thicker as we mounted higher, until we could not see a hundred yards ahead, while out from this white mist there looms occasionally a large black cross—the scene of murders. In less than an hour we arrived at the Convent—a relic of the first Franciscans—half the cells being underground and lined with cork, to keep out the damp, I presume; but why they did not add that one to their other voluntary miseries, I cannot say. We are shown also a cell hewn out of a rock underground, outside of which an inscription tells us that "Here Honorius lived and died in the service of God." Poor man! he must have led a wet, dark life, to say the best of it. Query, who was the most senseless, the aerial living St. Simeon Stylites was the most senseless, the aerial living St. Simeon Stylites or this grubbling Honorius? As I thus moralized my donkey fell and stood on his head, which made me of necessity do likewise, but we both got up uninjured and proceeded, till a shout from my guide made me turn back, when I found him busy picking up silver coin which I had dropped. "A poor but honest man," as he very properly described himself. And so to the palace of Dom Fernando, ex-king of Portugal, he having abdicated in favour of his son, the present King.

The castle is perched on the top of a rock, and that again on the top of a wooded hill, laid out in walks and gardens. It is a grand picturesque old palace, built in the semi-Moorish style, on the highest peak of the Cintra hill-range, and from a long way out at sea its roofs and towers are seen white and sparkling, crowning the purpled hill. The mist was thicker than ever up here, so we lost the view,

and then we wound down the hill-side into sunshine and Cintra town, where we finished our day by going over an old Moorish palace, with divers anecdotes and histories attached to every room; one ceiling was painted all over with magpies, each holding a scroll with "*pro bem*" written on them, the history of which is that a certain Queen found a certain King—her husband—paying certain attentions to a certain court lady. Queen thereon taxes King with flirting, King gaily replies *Honi soit qui mal y pense*, and has a slap at the Queen and the tittle-tattle of the court by painting the aforesaid magpies all over a ceiling. Moral—when wives and women tittle-tattle, let them tittle-tattle good little stories and not scandalous ones. And then with a couple of mules we rattled back to Lisbon in double-quick time.

The weather was atrocious during most of our stay; some of us went up the river duck-shooting, with but little success, one man being nearly buried in soft mud in which he sank, but was rescued in time. We passed what time we had on shore in dining at hotels and going to a rather poor opera, where I declare we never saw a pretty face among the audience night after night. I may mention that the landlady of one of the hotels is the mother of 32 children, equally divided between two dead husbands, and really if she re-married she looks quite capable of performing the same feat over again! Courtship is carried on in a curious way in Lisbon. The men are not allowed to come into the houses where their beloveds live, but have to remain in the street, while the young women are allowed to talk to them from verandahs; and walking along the streets in the late evenings these exciting interviews between the two lovers may sometimes be seen and heard.

On the 18th we arrived at Gibraltar, having had fine weather from Lisbon. We dredged several times with entire success, in depths under 1,000 fms., great hauls of mud and a few animals. The mud! ye gods, imagine a

cart full of whitish mud, filled with minutest shells, poured all wet and sticky and slimy on to some clean planks, and then you may have some faint idea of how globigerina mud appears to us. In this the naturalists paddle and wade about, putting spadefuls into successively finer and finer sieves, till nothing remains but the minute shells, &c.

But this cruise is memorable in the annals of the *Challenger*, as during it we first tried the trawl instead of the dredge, which revolutionized eventually our dredging system. We had a trawl or two on board—the ordinary beam trawl—which somebody proposed trying; so it was forthwith rigged up and sent down in 620 fms., after the dredge had come up with the usual hundredweight or two of mud and a few animals. And lo! in the trawl there appeared three fish of two different and exceedingly rare species, ghastly objects, bursting and blown out like balloons, with eyes starting out from their heads. There were also beautiful corals, two feet high, and brilliantly phosphorescent when stirred in a darkened room. The “cod” of the trawl was full of jellyfish and starfish, and there was a pleasant absence of mud, which the large mesh allowed to wash out as the net was hauled up.

We stayed at Gibraltar till the 26th, during which period nothing occurred of which I need write to you; and besides, everybody knows all about “old Gib,” which was doubly pleasant to us with its brilliant sunshine, and gardens a blaze of flowers, coming from England in winter, and south-westerly gales in the Channel and Lisbon. Between Lisbon and Madeira we had to take a line of soundings for a telegraph cable, the first 50 miles of which we did coming out from Lisbon the other day; this “line” we now picked up and continued, finding no deeper water across than 2,250 fms. We trawled three times in depths between 1,100 and 2,125 fms. with great success. In the first haul three fish came up; one is allied to a species we have got before, and the others are probably new, having peculiar soft skins and big brown eyes; also rare *salpæ*,

new starfish, corals, sponges, shrimps, &c. The next haul brought up several fine sponges—one quite new; a few sea-urchins—also new, or very rare; and a beautiful animal like a flowering plant. And from the third and deepest haul we brought to light a splendid *umbellularia*, the history of which is curious. It was got for the first time last century, and was never found again until last year, when a Swedish expedition dredged one up off the coast of Greenland. Our specimen is a thin flexible stalk about three feet long, with a bunch of wavy fibres at its head.

We have made improvements in the trawl—doubled the lower part of the net, so as to make the mesh smaller, and also put in an inner cod, on the principle of a lobster-pot. Boats away seeking for animal life on the surface caught a small turtle one day, and missed two others by a hair's breadth; shoals of big fish were swimming about, going freely into a hand-net which was put down to catch them but always swimming out again before the net could be hauled in, much to the despair of the man manœuvring it.

When close to Madeira we put the trawl over, which, however, fouled something at the bottom, the rope being carried away, and we lost our only trawl. On Feb. the 2nd we arrived at Madeira, having sounded right up to the harbour. Madeira was, as it always is, delicious and lovely.

Leaving on the 6th, we ran down with a fresh breeze to Teneriffe, where we anchored, early in the morning of the second day, off Santa Cruz, an uninteresting little town lying at the foot of a broken range of steep hills. The town is remarkable only for very badly paved streets, dirt, smells, and a church, in which are two English boats' ensigns, trophies of a repulse sustained by Nelson when attempting to land. The sight of these two captured ensigns so stirred the indignant soul of a midshipman not long ago, that he managed to steal them, and bore them secretly on board his ship: but the authorities found him

out, and he had to give them up ignominiously with many expressions of apology and regret, and since then they have been placed high out of anybody's reach.

The chief cultivation around the town is a species of cactus, planted in small fields, on which the cochineal insect is reared. The cacti are swaddled in strips of white cloth, on which first are sprinkled the eggs; the insects, when hatched, feeding on the plant till they are old enough to be used for the dye. The effect of these gaunt, blue cacti swathed in white bandages is ugly in the landscape.

A few dromedaries in pompous procession passed us carrying loads: these are the only ones we saw in the island, and come, I suppose, from Africa. The hills, and gullies between, in the immediate vicinity of the town, are sterile, covered with large stones, low bushes, euphorbias and cacti, so the scenery there is not very cheerful.

A party of three scientifics and self made an excursion up the Peak, or rather partly up the Peak, in this wise:—M. started in the early morning by public coach for Orotava, a town lying on the other side of the island, whence the start for the ascent must be made, to make preparation for, if possible, our going up that same evening. We other three, with tent, baggage, provisions, and three servants, followed in carriages, ourselves in a large open waggonette drawn by four horses, and the servants and impedimenta in a two-horsed machine.

We drove along an excellent road winding up the mountain range, from the top of which we had, for the first time, a magnificent view of the Peak covered with snow. Then we cantered down the other side, a long gradual descent diagonally across the mountain slope passing, as we got lower down, groups of date-palms, bananas, oranges, big fuchsia and geranium bushes, and here and there an old "dragon tree." This side of the island is very different from the other, the long gradual slope from the shore to where the mountain-ridge breaks in abruptly in precipitously wooded heights, being all

carefully cultivated and dotted with hamlets and houses ; the snow-clad Peak, invisible from the anchorage, rising ahead of us, the mountain-ridge on the left, while far below our right lay the sea, beating heavily against the shore.

We reached Orotava in about five hours, having first driven into a hamlet where uproarious laughter met our driver's remark that we were going up the mountain, and the villagers sarcastically questioned us as to whether we were going to drive up in our carriage and four? The English eccentricity for mountain-climbing is a proverb out here, and the season being winter makes our wish to go up all the more ludicrous to them. Orotava is a clean little town, the Brighton of Teneriffe. We hear that we cannot start to-night, and that the guides say they will not even try to take us to the top on account of the snow, so we must just go as high up as we can. Near the town are some pretty little botanic gardens, and in the town a prison, where Carlist prisoners are confined, who were hanging out of the windows, singing Carlist songs in a loud and unrepressed manner. We passed a dreadful night: beds full of insects, which dropped from the ceiling—too disagreeable for words.

Glad enough to rise at daylight, we breakfasted, ten horses then gradually making their appearance, five of which were loaded with our baggage, the remaining five to be used for riding, and about eight o'clock we started off, some riding, some walking. It was Sunday morning, and the people were flocking in to church all dressed in their best. For an hour or so we walked across the foot of the slope towards a high precipitous mountain spur, which shot out into the sea, and up which in course of time we climbed by a very steep road, and then we kept along its top, passing the last cottages and cultivation ; up, up, and ever up through a broad belt of beautiful tall heather, till we came to a spring and trees, where we uncheoned ; then on again through a belt of white cloud,

the heather vegetation abruptly ceasing, and we came to a desert of stones and hard ground, sprinkled with large straggling broom-bushes—the most villanous walking altogether.

The scene here was most glorious. Ahead and above us rose the grand snow-covered Peak, glittering in the sunlight, while away to our left the crest of the mountain ridge—now far beneath us—snaked away above the snow-white belt of cloud which broke against it like a sea of surf and foam. Behind and below us lay calmly the cloud-belt, stretching away from the mountain's side till it touched the pale blue sky, hiding the land and the sea—the world we had left—completely, excepting where, far away in the distance, the Island of Palma broke purple-coloured, above it.

On till we got to an elevation of 6,000 feet, when the guides said they could go no further, as they had to go down again the same day. It looked a bad camping-place but as we were at their mercy, we had to give in, unpacked the animals, sent the men away—bidding them, in the best Spanish that we knew, to go to Jericho or elsewhere—pitched our tent, cut broom-stuff to strew underneath the ground-cloth, and made a roaring fire. The scene of our encampment was a hard, stony slope, sprinkled with these large broom-bushes, which made splendid firewood, and beneath them lay patches of snow, which we used for cooking purposes when the water we brought in small barrels was exhausted, for there are no springs up here.

The sun went down behind the Peak in a sky blazing, with green, pink, and golden tints, lighting up the white belt of clouds below us with rainbow hues, while the Peak—against this brilliant back-ground—became blue-grey in colour, and though still 6,000 feet above us, the summit looked as if it were only an hour's walk away. The air began to get very cold as soon as the sun went down, and we were not sorry to put on greatcoats, as,

sitting round a roaring fire, we cooked and ate our dinner, the broom-stuff burning splendidly, and crackling like fireworks; the atmosphere resplendently clear, no breath of wind, no cloud to dim a brilliant moon shining on us, on the snow-covered mountain—looking distant now and clear-cut whitely against the deep black-purple sky—and on that solemn silent sea of white and motionless cloud. Through a small field-glass we saw one of Jupiter's satellites distinctly, which I looked for in vain when we got down again. Then into our tent and rugs.

Up at six o'clock the next morning, we found the water in the barrels frozen hard, though inside the tent we were warm enough, thanks to plenty of blankets, seven persons all sleeping together, and all ventilation stopped! Hot cocoa at breakfast was very acceptable, and then we started off to see what we could, the sun already beginning to get very hot. For an hour we walked over the same yellow-red, or dusty-brown stony ground, sprinkled with the same bushes, till we came to the top of a cliff, at the foot of which, stretching away to the foot of the inner cone—a mile away—lay a yellow, flat plain, looking intensely hot and barren. We circled round a short distance to the left, and, by a break in the cliff, got down into the plain, and found ourselves on a sea of small pumice-stone.

I must explain to you that this inner cone—the Peak—rises from the centre of an enormous old crater, whose precipitous cliffs encircle it, the intervening annular space—from one to two miles broad—being filled with pumice, scorix, and other things volcanic in nature.

We tramped across, under an unclouded sun, the heat tremendous, not a breath of air, ankle deep in loose pumice, and then got on harder ground, with rocks, and stones, and broom-bushes again, and so on we went, keeping along and round the foot of the cone till we came to large stretches of snow, and further on still nothing but snow, which glared up in our faces, making us blush

and our noses peel in a heartrending way ; but still on we staggered till we got on to a shoulder of the cone, sweeps of snow, from which here and there a rock stuck up, rising precipitously above us. We were now at an elevation of 9,000 feet, and it was too late to go on, or else, perhaps (or perhaps not!) we might have tried to get up higher, though common sense said it would be madness without a guide. The total height is 12,180 feet, so we were but some 3,000 feet below the summit.

The only living creatures we saw were a small rabbit, which bolted into a heap of loose rocks, two small birds, and two old ravens.

Do you remember those pretty pictures in atlases of the Peak of Teneriffe, how on a perfectly formed snow-capped cone the successive zones of vegetation are all mapped out with beautiful distinctness, how first come palms and all the tropical wealth of vegetation, how gradually as we rise higher into the air and up the symmetrical cone we come to the temperate zone with its oaks and pines, and then how as we get still higher we come to quite polar regions where grow lichens and mosses, and then finally come to snow ? Well ! it is all a snare and delusion, and a dream of my boyhood has been rudely dispelled. I had in all innocence hoped that the greater part of the ascent would be under and among these delicious woods, that in one day I should walk from the Tropics to the Pole, that in one hour I should be in some West Indian island again among palm-trees and orchids, and in the next among warm sunny woods of oak and beech, and from thence dive into cool dark pine forests, emerging into the frozen and cold snow region, which last indeed we did, and it was practically the only part of my dream that was realized. Disappointment fails as a word to describe my injured feelings, but luncheon there and then among the snow made me feel more resigned ; for when one is hungry and awfully thirsty, what won't a Bologna sausage and delicious water—coming bubbling out and down from the

thawing snow like a spring—do for one's feelings, however much injured?

Great red volcanic rocks were piled about here, and a black stream of obsidian had flowed down from above, of which we picked up specimens.

We returned by the way we had come, the heat greater than ever, and we were all pretty well exhausted by the time we got back to the tent. After supper cooked by our blue-jackets, we smoked and talked, and then amused ourselves by setting large bushes on fire, which was great fun, and had really a fine effect. They burnt furiously, a light breeze fanning and making the flames go surging through the thick green foliage and branches with a roar, crackling and rattling like artillery, quite equal to any prepared bonfire, while the flames rose high and fiercely in the air, the sparks, flying up and driven to leeward by the wind, setting other bushes on fire, which lit quickly and flashed into flame. We heard afterwards when we got down to the town that large fires had been seen burning high on the Peak, that the population had turned out, wondering if possibly the volcano had burst out from its long death to a new life, but had come to the conclusion that probably it was some devilry on the part of those mad Englishmen. And so after a nip of hot grog—religiously concocted every night—we went to bed.

Four horses and guides appeared at eight o'clock next morning to take our traps down to another place. We packed the animals and then started down walking—a painful process enough on the rough stony ground, worse even than coming up, and to add to our distress we lost our way among the bush and heather; but the cries of goatherds and the tinkling bells of goats put us right again. The two others had guns, and made a *détour* to try to shoot something; they flushed a quail and a brace of partridges, which last one barrel missed, while the other barrel deposited the firer on his back, and the partridges flew chuckling away.

In course of time we came again to the spring, near to which, on the banks of a lovely little ravine, covered with flowering tree-heather, grass, violets, and a small stream rippling along its bed, we pitched our tent inside a goat-pen, which had the merit of being flat, if somewhat dirty. We were just above the cultivated fields on a steep slope of grassy ground and heather, about 3,000 feet above the sea. A cloud arrived at the same time that we did, and gave us a sharp shower, luckily not before the tent was pitched and our traps placed inside; but it made all the firewood wet, and if it had not been for a couple of goat-herds, who ran off and gathered dead heather for us, we should have fared badly in the fire, and, consequently, in the dinner way. We roamed about the gully's banks and shot small birds, among which was a robin, set our traps, in which, by the way, nothing was ever caught, and then returned to our camp-fire to eat, and drink, and smoke, and sleep.

Heavy rain fell during the night, pattering down on our tent in an alarming, monotonous manner; however not a drop came through. It cleared up in time to let us have breakfast as usual, and became a beautiful day. Our goatherds were again in attendance, making themselves very useful, and getting the remains of our cocoa and biscuit. After breakfast three of us scrambled down the side of the spur, while the fourth went away in another direction, and, to do physical atlases justice, I believe he did come upon a small clump of scraggy pines and oak. The spur-side was the only luxuriant bit of vegetation we saw, rising abruptly from the cultivated slope 800 feet below, and covered with magnificent tree-heather, laurels, shrubbery, low trees of different kinds, and violets in profusion scenting the air most deliciously, while the rocks were covered with mosses and lichens. We shot a few birds, and collected such spiders and other insects as we could find.

A woman came near our tent in the afternoon, and to her we shouted *Huevos*? The unexpected result being a

procession of old women and boys, each with a basket full of eggs—seven of them one after another. After we had got as many eggs as we wanted, paying London prices for them, three girls appeared with more baskets, but as they had met the return procession with their only half-empty baskets, we flattered ourselves they came to see us more than to sell their eggs. The eggs we fried and put into the soup—quite delicious!

Next morning five horses with guides arrived at six o'clock, and after a bathe and breakfast, we packed up, first distributing a lot of biscuit to small boys and girls, who ate it as if they had not had a meal for days, and then we walked down to Orotava, shooting canaries on the way. The wild canary, here being more green than yellow, is a very different bird from the one we know at home. We got to the hotel about eleven o'clock, and drove back to Santa Cruz, stopping on the way at a village called Tacearonte to see some mummies, relics of a former race of inhabitants, about whom no one knows anything, excepting by these mummies and pieces of pottery and fish-hooks which have been found in abundance.

During our absence the ship had been dredging round the island and getting good hauls.

It was not our fault that in a natural history way our Teneriffe Peak cruise was rather a farce. We had been in hopes of getting plenty of insects and birds, but nowhere have I seen a greater absence of life in any shape. At our first encampment we only saw small birds of one kind, which hopped about beneath the bushes and were almost impossible to see. Higher up a willow-warbler was shot, but nothing else, although for two days a gun was always in hand and ready; a rabbit was seen at an elevation of about 7,000 feet, and beetles and centipedes were found hibernating under stones, very sleepy and foolish. At the lowest encampment birds were more numerous, but almost impossible to shoot. Down below sparrow-hawks were common, also canaries, small tits,

pied wagtails, and large brown buzzards. However, if science gained nothing by us, we at all events enjoyed ourselves immensely.

We left Teneriffe on Feb. the 14th, and sailed westward across the Atlantic in the trade-wind regions with fresh breezes and beautiful weather, to St. Thomas's in the West Indies, distant about 2,700 miles, arriving there March the 16th. We sounded at about every 120 miles, and dredged at every 300, taking 22 deep-sea soundings, and 13 dredgings in depths varying from 1,420 to 3,150 fms.—the deepest water on this section.

In depths above 2,575 fms. we found an hitherto unknown formation being deposited at the bottom of the sea,—a dark reddish or chocolate-coloured clay, with scarcely a vestige of life in it, and no trace of lime where it was got in its purest condition, and from the greatest depth; while from there as the banks rose very gradually away on either side of this deep channel, so gradually the lime reappeared—the mud going through successive shades of reddish and yellowish grey—till it again became the whitish "globigerina ooze," usually found hitherto in depths less than 2,575 fms. This pure clay is so fine that between the fingers it feels like grease.

160 miles to the S.W. of the Canaries we found a shallow bank of 1,525 fms.; having the day before sounded in nearly 2,000 fms., and dredged there, getting half a bagful of globigerina mud, and that was all. The dredge was sent down on this bank, and caught a quantity of dead coral, coated with hard black matter, and large sponges of a new species growing on the branches; a number of small white starfish also came up, but no mud, so the dredge must have scraped over a forest of dead coral.

The afternoon of the 21st we sounded in 2,700 fms., and put the dredge over with 3,400 fms. of line. The dredge remained down during the night, and was hauled in at six o'clock, the "accumulator" stretching to its fullest

extent under the heavy strain. Nothing but yellowish mud in it after all, full of foraminifera, &c. The time we dredged in 3,150 fms., a sounding-rod with weights was secured below the dredge, which took it quickly down, and after dragging it for a while we hove it up again at ten o'clock with nothing but the pure red clay and a few sandy foraminifera. A dredging in 1,900 fms. gave us a large red prawn, semi-transparent, and very remarkable as having no eyes at all. The next day in about the same depth we sent a trawl down which had been made on board, the seine net having been cut up for the purpose. It came up, alas! with the pole broken in two, twisted and flattened in every sort of way, and the knots forced—some clean out, some sticking half way—out of the wood by the pressure. However, a few small animals did come up in spite of this.

On March the 6th we were surrounded by gulf weed, which a boat went away to examine, and picked up small shrimps, snails, crabs, and round little fish which make nests of the weed, cementing them by some glutinous substance, and then hang on outside by two absurd little arm-fins and fingers. The crabs are frequently found in possession of these fish-nests.

In the next haul from 2,435 fms., we got three shark's teeth and a few phosphate secretions; and in the next—2,650 fms., on dark-red clay bottom—a small eel. Shoals of dolphin swam round the ship, their young, and the young of flying fish, being caught in the towing net. We saw great numbers of these gulf-weed fish-nests; it is curious how the animals which live among the weed correspond to it exactly in colour—shrimps, snails, and fish. The "phosphate secretions" turn out on analysis to be manganese, with which also it is now seen the aforementioned coral was covered, and rapidly becoming manganese throughout; and the question is why at these great depths do dead things become covered and impregnated with manganese? The answer will no doubt be

found, when we get home again, in an analysis of the bottom water, which we always procure.

We next dredged in 3,000 fms., with the result of plenty of brown-red mud and some worms; joy all round at finding such high forms of life in such low depths! Two days afterwards, when within sight of the Island of St. Bartholomew, we tried to trawl in 1,420 fms., but it fouled something at the bottom, and the pole broke. The next day we dredged three times in depths of about 500 fms., close to Sombrero, and got splendid hauls each time of sponges, corals, crustaceans, fish, and starfish, new species among each genera mentioned.

On the 24th we left the least pretty, the least typical, the most disappointing West Indian island I know of the many I have seen. St. Thomas is associated in Europeans' ears with tremendous hurricanes and epidemics of yellow fever. The first of these the Danish officials and inhabitants have it not in their power to alter; but the second they have mitigated, if not entirely suppressed, by cutting channels through certain coral reefs in their harbour, thereby causing a tidal circulation where was absolutely none before. St. Thomas is not a cheering place for an enthusiastic abolitionist to study the negro in a state of freedom. What were once sugar and cotton plantations is now covered with scrub, for the negroes will not work there while constant mail steamers come in for coals, at which, in a very few hours, they can earn enough to keep them for many days. Women work at the coaling too like horses, and the sight altogether is not an edifying one.

A horrid accident occurred on board the following day while we were dredging in shallow water. The dredge fouled at the bottom, and the strain was too much for an iron hook which secured a block to the deck through which the dredge-rope rove. The hook broke, the block flew up with tremendous velocity, and struck a boy who happened to be standing near, and so injured him that he died—insensible—four hours afterwards.

The next day we sounded in the deepest water we have yet found, 3,875 fms. Both thermometers were smashed, they not being tested above a pressure of 3 tons on the square inch, while the pressure to-day was about 4 tons on the square inch (in round numbers 1 ton for each 1,000 fathoms). A small dredge was then sent down attached to a sounding-machine. Nothing but mud of two different colours, which we had also observed in the sounding-machine, came up, a thin top layer of chocolate-red mud, while beneath was a blue-grey coloured mud.

In the evening we buried the poor boy who was killed on the previous day.

Not to weary you with repetition, I will only say that we sounded constantly right up to Bermuda, and dredged twice in depths of about 2,800 fms., with the chocolate-red mud result as usual, and a small red shrimp, which may, or may not, have come from the bottom. There appears to be something in the dark-red clay fatal to life, which would seem to make it only waste of time to dredge on it. In the shallow water close around Bermuda we got some good hauls, new species of sea-urchins, starfish, sponges; and on April the 4th we steamed into Bermuda through the narrow, tortuous channel in the outlying coral-reefs.

Bermuda is remarkable for its varied vegetation, its admirable tomatoes and onions, its epidemics of yellow fever, its damp cold weather at some seasons, its intense heat at another, its geology, its numerous caves, its villanous mosquitoes, its fish, its unique but monotonous loveliness, its great importance as a naval and military station, and, I would add, its intense wearisomeness.

Scores of islands and islets, some hilly, some flat, lie dotted within the outlying chain of coral reefs, through which there is only one safe ship-passage into the inner waters, but so intricate is this twisting lane of deep water, that, in spite of numerous buoys, men-of-war frequently

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ground on the hedging reefs. At this moment there is a large ironclad in the dock with a portion of her false keel knocked away from having "touched" when entering the other day. From which you can imagine how pleasant it would be for an enemy to try and get in with no buoys, but torpedoes instead, to say nothing of a turret ship placed in the "narrows," and heavy forts blazing away from the shore.

The predominant vegetation of the Bermudas is a juniper, whose sombre colouring gives a cold northern look to the islands from the sea; but when on shore you find this dark foliage relieved by splendid oleanders, at this season in full bloom—great masses of pink and white blossom; and among these in many parts tropical vegetation is seen growing luxuriantly:—coco and palmetto palms, papaus, bananas, &c.; while here and there, fringing the shores, are mangrove-swamps, swarming with large tree-climbing crabs. Rich fields of grass, of tomatoes and onions, lie imbedded among groves of oleander and cedar, alive with "cardinal birds" in beautiful scarlet plumage. In the clear shallow waters—floored everywhere with corals and algæ—fish swarm and are easily caught with bait, but better still on the outer reefs, where splendid fishing is to be got.

The "Devil's hole"—once evidently a cave, but now a deep uncovered hole filled with blue water, through which, far down, are seen the white rocks shimmering—is kept full of fish, principally "groupers," large, ugly beasts, some coloured light red, some brown, some every shade between the two, which as you approach rush forward, remaining then motionless, watching you fixedly with wide-open mouth and goggling eyes, as if only waiting for you to jump among them and be devoured. Then an "angel fish" steals out from a hole in the depths, swimming slowly on his side, revealing his flashing coat of gold and blue, and vanishes, he being like his namesake, of a retiring disposition. And here comes, quietly paddling, a

turtle, looks at us, then dives down, getting bluer and bluer, till he too disappears.

The limestone rocks (of which the islands are entirely composed) are undermined with caves, many of which are of great size, with huge stalactites and stalagmites. One cave, whose entrance lies at the bottom of a steep rough slope, formed of a portion of the broken-in roof, is filled with water,—percolating from the sea through the porous rock—on which are boats; so with the aid of lights you can paddle a long way in.

Leaving Bermuda on the 21st, we dredged around the island till the night of the 23rd, when we anchored in 30 fms. on an hitherto unknown reef, a few miles S.W. of the island; all hands got their fishing lines out, though with very limited success. Next morning four boats went away surveying and defining the boundaries and extent of the reef, while the ship remained at anchor dredging; this was done by carrying the dredge out in a boat, which dropped it, and then we dragged it in from the ship; good results in shapes of beautiful corals, algæ, bright red starfish, &c.; also many lovely little fish, coloured the brightest blue and yellow, and others a brilliant red.

And then we made sail for New York, to take an interesting section across the Gulf Stream. We found 2,650 fms. next day on a spot marked on the chart 60 fms.-rock, and dredged there, getting only some grey ooze. We sounded again the next day in nearly the same depth; a dirty-looking evening, fresh breeze from S.W., the ship put under close-reefed topsails. The wind headed us in the middle watch, and all day of the 26th we had a fresh gale right in our teeth, the ship lurching heavily, and the following day we were ten miles further off New York than we had been the day before, though we plunged and ploughed about in the water a distance of 70 miles in the meantime. On the 27th, with the wind and sea considerably gone down, we sounded in rather deeper water, and again the next day in about the same depth, where we dredged—

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a little mud, a new red shrimp, and a small fish. A fresh S.E. breeze sprang up in the night, followed by a heavy swell, in which we tried to get serial temperatures next morning, as according to the chart we ought to have been on the edge of the Gulf Stream. But we had hardly got head to wind when the starboard tiller rope "carried away," and *whirr* round spun the wheel, throwing the three helmsmen clean over it, who, however, were fortunately not much damaged. We "hove to" till the afternoon, when, the wind and swell moderating, we managed to get the temperatures, which showed no signs of the Gulf Stream yet.

April 30th.—Sounded early in 2,425 fms., not yet in the Stream, which we at last did get into in the afternoon, as indicated by the surface temperature, which suddenly rose from $65\frac{1}{2}^{\circ}$ to $75\frac{1}{2}^{\circ}$.

A flock of exhausted small rails flew about the ship, and several were caught.

Next day, in the full strength of the Gulf Stream, running right in the face of a fresh easterly breeze, causing a heavy confused swell, we tried twice to get bottom in vain; the line in the first instance carrying away; and in the second the weights, coming up again, showed that they had not touched bottom. To keep the ship plumb with the sounding-line, she had to be put stern to wind and head to current, steaming at the rate of three knots, keeping really stationary, though the Stream, tearing past, made her look as if she were going fast through the water.

The temperatures showed that at this spot the Gulf Stream¹ extends to nearly one hundred fathoms below the surface, and immediately beneath is the cold southerly current which runs, too, along the American coast—known as the Labrador current—and is, of course, intensely colder

¹ "If we take the width, depth, and rapidity of the Gulf Stream as being on an average equal to what the *Challenger* found it when she crossed, on which occasion it was 100 fathoms deep, and running at the rate of 3 miles an hour for a width of 15 miles—this gives a volume of heated water of 108 cubic miles per day discharged into the North Atlantic."

than the general body of water at corresponding depths in the Atlantic, coming straight as it does from the Arctic regions; but still its lowest temperature is not below that which we found in the deeper water of the Atlantic further south, which goes towards proving that the bottom water there comes from the Antarctic—not from the Arctic.

With a fair wind we again kept on our course, getting out of the Gulf Stream in the night, the temperature of the surface-water toppling down suddenly 11° , and the colour of the sea changing from deep blue to a dirty bottle-green colour. Dredged in 1,700 fms., a very good haul; and then over a smooth green sea and under a pouring rain, coming down from a lead-coloured sky, we kept on for Sandy Hook with a fair breeze, getting into fog, and Scotch mist, and a cold north wind next morning, which two first went and came again several times during the day—pleasantly occupied in dredging in 1,240 fms., the tangles coming up heavy with starfish and echini, and the bag full of blackish mud and pebbles. A splendid haul—new echini, new starfish, new shrimp, new worm, new—everything!—the worm being the size of a small eel. Dead foul wind for Sandy Hook, which I doubt our seeing.

May 4th.—Thermometer last night 39° , pleasant after five months of a minimum temperature of 72° ! Wind still ahead, and so New York is given up, and we are steering for Halifax with a fair breeze, which, freshening up the next day, sent us bowling along merrily under full sail till it suddenly shifted, took us by the lee, and then fell calm. We sailed over curious veins of warm and cold water to-day, the temperature in the forenoon rising to 54° , and going down suddenly in the evening to 42° . *6th.*—Another cloudless, calm day. Dredged off the Newfoundland cod-banks in 1,350 fms., with much the same result as the other day, great numbers of starfish of a species—among others—of which only three have been found as yet. Steamed on for Halifax during the night. *7th.*—And yet another beautiful day. Fishing schooners all round us

fishing for cod on the "Le Have bank." After dredging twice and getting fine hauls of stalked starfish, echini, &c., we all turned to fishing for cod—very cold, but successful work. The captain went on board a schooner and bought bait. We caught altogether about seventy fish, the largest being about 30 lbs. weight. Very fatiguing work hauling them in from 30 fms., but great fun. Next day we arrived at Halifax, where the ship remained till the 19th, when she again taking a second section across the Gulf Stream, went back to Bermuda, arriving there the last day in May, and again sailing eastward for a second section across the Atlantic on June the 12th.

For this cruise I will once again, and only once again, tell you of our sea-work in some detail. The section was 1,800 miles in length. We sounded 16 times, and dredged or trawled 9 times, in depths from 2,850 fms. to 1,000 fms. Our first trawling in 2,575 fms. appeared not to have reached the bottom, and so came up with only a fish and some surface animals. The next in 2,850 fms. on reddish grey ground, brought up two large holothurians, numbers of small white starfish, barnacles of a new species attached to stones, and a few small black fish.

On the 19th we trawled in 2,750 fms.:—barnacles and sea-anemones attached to stones, and a long, lean, black, ugly fish with a beard; and the next day—it had been calm in the meanwhile, so we had scarcely altered our position—we dredged to compare results with those of the trawl:—a small white starfish, worms, and polyzoa. 24th.—Trawled in 2,175 fms. on globigerina ooze:—a red soldier-crab, its shell covered with small sea-anemones, a white eyeless shrimp, and a new polyzoon, over which science is delighted. 25th.—Trawled in 2,200 fms. on very hard ooze ground:—an enormous "pyrosoma," four feet two inches long by nine inches broad; it is a large sack closed at one end, and the whole spotted with pink lumps, each lump being a separate animal, in this case numbering one or two hundred thousand; a large deep carmine-coloured

shrimp, particularly interesting, as being a connecting link between two other species, but no bottom animals appeared, so shore science theorizes that the trawl never touched the bottom, while naval practice swears that it must have done so. We imagine this pyrosoma must be the largest ever seen. At night, as it lay in the tub, it was most brilliantly phosphorescent, and we wrote upon it our names at full length, which presently came out in letters of brilliant light. An electric shock appeared to have no effect whatever on its nervous system. 26th.—A foul trawl from 1,625 fms., with, however, a worm, a sea-spider with three-inch length of legs and body comparatively nowhere, and a small sponge. The electric shock did after all affect the pyrosoma's nervous system, for in the night it fell into thousands of little gelatinous lumps, each with a pink nucleus, each being a separate animal.

We caught a turtle to-day, which could not dive on account of barnacles growing under the fins, so they could not be worked. Turtle are frequently found in this state, and are then easily caught.

On the 30th, when within sight of Flores—one of the Azores—we dredged twice in 1,000 fms., and among other things there was a living coral—the finest we have yet taken.

On the evening of July the 1st we anchored off the town of Horta, on the Island of Fayal. The health officer came off, and asked us most minute questions as to our health, all the time remaining in his boat alongside, as if we were a source of contagion, and went away, giving us the idea that we, being so healthy, could of course land, but said not one word of what the English Vice-Consul, who immediately followed him, told us, that small-pox was raging in the town—two deaths a day last month! So after laying in vast stores of delicious little figs, apricots, and flowers, we left Fayal for the Island of St. Michael, 120 miles distant. All next day we dredged between the Islands of Fayal and Pico in shallow water,

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getting good hauls from a bed of broken shell, scorizæ, and coral.

This Island of Pico rises in a beautiful cone 7,600 feet high; a grand sight as the rising sun broke up the clouds which covered the summit, standing out boldly, tinted pink and purple, against a pale-blue sky above a necklace of pearly cloud. Towards evening we made sail to a light breeze, and rippled quietly over smooth water, with Pico rising symmetrically out from the sea close on our star-board side, while behind lay Fayal, and on our port beam and bow the large Island of San Jorge; and as the sun set, the sky flushed crimson, streaked with grey belts of cloud; the peak above us became tinted pink and violet, Fayal light purple, San Jorge pale-blue and yellow, with its mountain-tops hidden by yellow clouds, and the sea—reflecting the sky—all pink, blue-rippled by the breeze. The ship is under full sail, a shoal of porpoises close alongside leaping and splashing, some turning complete somersaults in the air, and we all on deck smoking our after-dinner cigars. The sun goes down, the peak becomes bluer, the crimson sky, through shades of pink, is quenched; purpler and purpler the peak and islands become, darker the blue of sea and sky; Fayal vanishes, San Jorge is misty, our cigars are nearly out, porpoises are gone, the peak is now a dark purple against a purple sky, and—it is not yet over; from behind the shoulder of the peak rises a pale-yellow crescent, and sends a path of sparkling dancing light across the sea to our ship.

On the 3rd we arrived at St. Michael's, having dredged on the way in 900 fms., and got a few starfish and a large dead crinoid. Crinoids being one of the most rare and wished-for things, we dredged again in hopes of more, but unsuccessfully. We have scarcely got one crinoid the whole time we have been away, which disappoints and dismays science.

The characteristic features of all these islands are much the same, the land sloping from steep sea-cliffs to high

volcanic ridges, and every inch of ground apparently cultivated. Ponta Delgado, the capital of the group and seat of government, is a long white town, of which windows are the principal feature, with a background of rugged low hills extending away to right and left. On the right are some higher and distant hills. To our great joy we found that there was no small-pox here, and so we overran the island in all directions. The town is particularly clean, and dull; the corners of every white or yellow house and of every window edged with black. There is a modest but good little hotel kept by an Englishman.

St. Michael's is a beautiful island, and it is a wonder that it is not more visited than it is. Our first cruise was to the "Seven Cities." We drove from the town in carriages drawn by three mules abreast, along good roads, passing large orangeries surrounded by high walls and trees, which are planted in close rows to protect the orange-trees from the wind, and then through fields of corn, maize, and other crops, for two hours, when we got out, and mounting donkeys, rode up the side of a hill by a rather steep path, the ground around sprinkled with stunted evergreens and tree-heather. After less than an hour's pull we got to the top of the ridge, where suddenly an exquisitely lovely scene lay before us.

We found ourselves on the edge of a huge crater, three miles in diameter, looking down on two azure blue lakes occupying half the bed of this old volcano, while the other half was covered with woods, cultivated fields, and a small village partly nestled among foliage, partly standing within fields, where also in other places stood here and there a cottage. Green tongues of land shot out into the lakes, whose banks rose from the blue water, cushioned with foliage; and scattered among the woods and fields, we could count seven small craters, miniatures of the one they rest in, only more perfect in conical form, and inside them again were blue ponds surrounded by trees and bush

which, too, covered the unbroken green wall of cliff a thousand feet high, encircling this smiling sunken land. A zigzag path down the crater's wall at this point takes one to the bottom, where they say are beautiful gardens, one particularly in which is a grove of splendid araucaria; but we had no time to go and see them. They tell us, too, that these lakes are full of gold fish.

Behind the town of Ponta Delgado there are gardens, numbering about half a dozen, which are, as private gardens, I believe unrivalled in the world, while no public garden I know beats them in wealth of vegetation, though in scenery and arrangement they are distanced by the famous botanical garden at Rio Janeiro. They belong to rich Portuguese gentlemen, who appear to have devoted their lives and money to these wonderful gardens, which defy any description of mine. The climate is so mild that *everything*—vegetation tropical, temperate, polar—grows in the greatest luxuriance. Frost is unknown excepting on the higher hill ranges, the temperature seldom going below 45° or above 95°, and so one sees large bushes of fuchsia, geraniums, camellias, roses, rhododendrons, and azaleas of every variety growing in wonderful beauty, and covered with blossom; fruit-trees of every kind; araucarias, wellingtonias, cryptomerias, casuarina, palms of more than a dozen varieties, yews, poplars, elders, evergreens, bamboos, dracaenas, and a host of others, all grow here side by side, and the one fault is that they are too crowded.

Walks, delightfully shaded, meander in all directions among these trees and plants collected from every part of the world, among groves of stately pines and palms, flower-beds blazing with colour, ferneries thick with splendid ferns, lawns, small lakes, ponds, and here and there are summer-houses overrun with gorgeous creepers, and reservoirs, from the top of which one gets a beautiful view over the acres of garden sloping down to the sea, while within there are large baths full of refreshingly cold water. You knew before that the Azores are where most of the oranges you

eat come from, but you did not know that in these out-of-the-way islands there are botanical gardens such as can be seen nowhere else in the world with so great comfort. For, after all, the intense heat in the most beautiful botanical gardens I had seen before—those at Rio Janeiro and Trinidad—takes half away from the pleasure they would otherwise give me, in spite of the humming-birds—absent here,—but so also is the intense heat.

A number of us went on a cruise to a place twenty-seven miles distant on the eastern end of the island, from which the first party came back so entranced and delighted with what they had seen, that M. and I made a rush for it the day before we sailed. We started from the town early in the morning and drove over pretty country, past large orangeries near the town, and then through fields growing yellow corn, green maize, tobacco, flax, and beans; the hills, where not cultivated, being covered with the maritime pine, eucalyptus, acacias, and poplars. The road was thronged with men, women, children, oxen, and donkeys, the last carrying loaded paniers, or bundles of sticks, or great loads of withered maize, so completely hiding the donkey that nothing was visible but legs, and on top of all sat a lazy brute of a man. We drive through small towns and villages, where hideous hags and pretty girls stare wonderingly at us, while children in a state of nature come running after the carriage in hopes of coppers; so choosing the prettiest, we give them one, and away they run down the street, their hair flying behind, followed in wild chase by all the other nude little things—a scene worthy of the Pacific Islands.

For a considerable distance we kept along the northern shore of the island, the sea on our left, now far below us as we mounted above the bold cliffs and headlands, and now close to us, as the road dipped across the beds of gullies opening on the shore. Our driver alarmed us by the way he dashed down extremely steep gradients, first putting on two drags, then down we went at a hard gallop.

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He turned out to be quite drunk, which possibly accounted for his behaviour, but fortunately for our peace of mind we did not find it out till the worst was past, and then we sat ready to knock him off the box, and take the reins instead of this drunken Jehu. The road then led across the island, and for several miles we drove over a high, rolling plateau, covered with heather, bracken, and cattle, till again we found ourselves looking down on an ancient extinct crater, its uneven bed covered with cultivation and woods. But this crater is much larger than the "*Septe Cidades*," is sunk deeper between its tremendous walls, which, opposite us—standing near the apex of this somewhat horseshoe-shaped volcanic chasm—to the southward, are broken away towards the sea.

A well-engineered road takes one down the long, steep mountain incline, and soon we drove into a village, and drew up at the door of a large Portuguese hotel, where as soon as they heard that we were not going to put up, they charitably refused to give us anything to eat, "for," said they, regardless of our feelings, "it is not worth while!" Giving them what unparliamentary language our Portuguese vocabulary admitted of, we got a guide and went on foot to see the sulphur springs, from which the district derives its name—"Las furnaces." A twenty minutes' walk through barley-fields brought us to a long stone building, in which were the baths, each bath having its own room and system of pipes; the proper thing being, we were told, to take first a sulphur bath, then an iron one, then two others, and finally a combination of all four, but we were not tempted to try any. Outside the building are open tanks into which the water from the different mineral springs—some hundred yards away—is led by pipes. This water is of a thick blue colour, and very hot.

A little further on we came to the springs, which I suppose are like similar springs elsewhere, but they were new to me. The largest forms a circular pool about twelve feet in diameter, the water boiling up in its centre to a

height of two or three feet. There are about half a dozen separate jets, some of water, some of mud, distributed over an acre of ground. Most of them come boiling up, throb, throbbing with the regularity of steam-pumps, forming no pools, the water escaping by an underground passage. The mud jet scattered blue mud profusely around and made a great row. The waters of some are clear, of others muddy, both containing large quantities of sulphur, silex, and other minerals, with which the rocks and everything around are beautifully encrusted. Clouds of steam rose from the jets, and the ground was very hot, which made me glad that I was not, as our guide was—shoeless. Close by are cold iron springs. These baths are much frequented for rheumatic and other affections by the natives of the island, but hardly at all by foreigners.

When we got back to the village we mounted two lively donkeys, unprovided with stirrups or bridles, their saddles consisting of a heavy, soft piece of furniture, and rode to where we were going to ask quarters for the night—a distance of about three miles. Leaving the village we ascended a steep brae, a beautiful garden lying between us and the cliff, and then we rode along the foot of the cliff—several hundred feet in height and covered with ferns and scrub—in lanes lined with blackberry hedges, over hilly cultivated ground, till we arrived at the crest of a wooded bank, which sloped into the greenish waters of a lake, bounded, excepting on this side, by the high terminal wall of the crater. We descended the bank, and kept along the red shores of the lake where cattle were picturesquely grouped, passing close by more hot-springs, from which steam rose in a thick white column, and then we climbed up the side of a promontory jutting out from the cliff into the lake, and on top of which stood an ugly house, at whose door we find the steward of the estate.

"How do you do, Mr. Brown; can you put us up for the night?" "Well," says Mr. Brown, in a resigned and lugubrious manner, "I suppose when a big ship like yours

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comes, we are obliged to!" Poor man! he had evidently not recovered from the invasion of fifteen of our fellows who were here the other day. However, Mr. Brown, his wife, and son turned out to be hospitable people.

This estate of 400 acres, with an excellent house, was bought a few years ago by an Englishman, who has never visited it, and so allows his house to be used as a boarding-house for whomsoever his steward may care to lodge. I can't tell you what a lovely place it is, the cliff rising 800 feet high in rear, but not so steeply as to prevent paths being made in its face, by which one can get to the top; while in front, seen over the wooded promontory, lies the lake, a mile and a half in length, surrounded by precipitous green cliffs, or banks of foliage, above which are seen the mountains bounding the other side of the crater.

We stayed there that night, and how delightful it all was! The stroll before dinner to the boiling springs, tossing up in a troubled pool whence rose clouds of vapour; then the scramble up the banks covered with foliage and ferns, and so to a deep cleft in the cliff, where a burn came tumbling down; how pleasant to send a boy back for towels, and to bathe in deep little pools of the clearest water; how pretty the wagtails appearing out from their holes in the cliff-face, and strutting fussily on the ledges outside, wondering, no doubt, who those lovely nymphs bathing below them could be; how excellent the dinner, the fresh meat, the ducks and green peas, the butter and the vegetables; how attentive the chatty little maid Marie, speaking doubtful but unhesitating English, telling us all about certain young ladies of the island who were "verr reech, but verr oglee," and above, beyond everything, how delicious the wild strawberries and cream! After dinner we were much entertained by a harmless madman—a handsome fellow with long red locks and beard, who spoke a little English, and imagined himself playing an exciting game of cricket, hitting the ball finally to such a distance that from its search he never came back.

Next morning donkeys arrived, and we rode back, my donkey proving a perfect tiger. In a narrow lane we met a meek little ass ridden by a boy. There was scarcely room to pass, and what does my stalwart donkey do, but suddenly rear with a shriek, fall teeth and hoofs bodily on to small ass and boy, both falling heavily, my donkey on top of them, all three shrieking, yelling, and two at least kicking like mad. I never saw such a scene; but at length we managed to separate the combatants, the small boy miraculously not being much hurt. We rode to the top of the hill, and then got into our carriage, and drove quickly back to town, where we found a large religious procession going on, such as one might see in any Roman Catholic country. We had met crowds of people on the road, streaming into town, everybody dressed in their gayest and best, the first, with the women, consisting of brightly-coloured cotton gowns, shawls—often of Scotch plaid fashion—and gandy handkerchiefs tied round their hair; and the second of heavy dark blue cloaks completely enveloping the whole dress, while over their heads are enormous stiff hoods, deep in the recesses of which their faces are buried.

Judging by the demeanour of the people, they must be sincere enough in their religious belief and faith in the efficacy of this procession, followed by high mass, to bring them rain, the island having suffered from drought. As a matter of fact last year after a similar ceremony to this, rain *did* fall the next day. We walked down the now empty street along which a few minutes before the great procession had swept, the balconies on both sides still filled with ladies, pretty ones too, who looked down on us Englishmen with much interest and, let us hope, admiration.

So before we leave St. Michael's I must again express my wonder as to why it is not more visited. The climate during the proper season is perfect, and the scenery here and there beautiful: there is fair shooting, unlimited

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driving, plenty of good meat, vegetables, and fruit, immense orangeries (the export "fruit season" lasts from November till May, the most stormy months of the year), a well-mannered and civil population, they being the most favourable race of Portuguese that I know, as these islands are I think the pleasantest of Portugal's possessions, not excepting Madeira.

We left St. Michael's on the evening of July the 9th, sounding every day and dredging twice on the way, and anchored off Madeira on the 16th; there we found small-pox very bad, and so, without going on shore, we left next day in the evening for the Cape de Verde Islands.

On the morning of the second day we were close to Palma, in the Canary group, where we dredged, and again two days afterwards on the same coral bank where we had dredged on the way out, but we did not strike the exact spot, in spite of having the night before run before the wind under bare poles, so as not to overshoot it. However, from over 1,600 fms. we got, as before, some dead black coral, and a curious small crustacean. Next day we trawled in 2,400 fms., getting new starfish and two fish—one the same that we catch with almost every haul, and the other a new species of "mudfish," or "angler," which catch their prey by burying themselves in mud, and so there can be no doubt that he, anyway, lives at the bottom at that depth.

On the 27th we arrived at St. Vincent—one of the Cape de Verde group.

St. Vincent is, I think, the most dismal place that I know. The only thing to be said in its favour is that it has a good harbour, in which, for a long time now a coaling station has been established by an English firm, who have the entire monopoly of coaling the constantly passing mail-steamers and men-of-war. On shore it is simply the abomination of desolation, scarcely a green twig or blade to be seen over miles of barren valley-plains of lava, covered with thin black bushes, scorix, stones, and

rocks, varied occasionally by the corpses of donkeys, or goats, and running between tossed about mountains made of the same materials. Here and there, however, you may come upon a group of tamarisk trees—haunted by insects; now and then you may see a small bird hopping on the ground, or a crow flying by overhead, its harsh cry startling the silence of the burnt-up desert; beneath the stones black geckos hide their ugly forms; and a quail or two *may* rise from the bushes, and reward (?) your day-long search after sport. The population is composed of negroes, a Portuguese official or two, two Englishmen connected with the coaling dépôt, and a few Portuguese outlaws—murderers, forgers, *et hoc genus omne*, who, as long as they behave decently, can do as they like.

The one amusement is to ride donkeys and wretched horses, and as we sailors can make good fun out of even the barrenest lands, when happily we land there, so we got a certain amount of fun from these rides. It is useless to try to walk, the heat is stifling, there is no water, no shade, and your steps are always ankle-deep in sand.

The negresses here are splendid specimens, and when you go for a twenty-mile ride it is they who carry the heavy luncheon baskets on their heads, striding along for hours without apparent fatigue; and one of the women who came this distance with us had been confined a very short time before. The men think it *infra dig.* to carry anything, and one day I watched a tall negro in the wretched little village putting good loads of mortar on a board, which he then placed on the white head of a withered old negress, who walked off, straight as a rod, some hundred yards and deposited her load, coming back to do this over and over again, and all that the strapping brute of a negro did, was to pile spadefuls of mortar on to the board, and this went on all day!

From that island of abomination yeleft St. Vincent, we ran down in three days to St. Iago, another of the Cape de Verde islands, intending only to stay one day, but found

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it so pleasant that we remained three. St. Iago is the seat of government for the group. From the anchorage the scene looked scarcely more inviting than St. Vincent; the town built in a shallow bay, on flat table-land rising abruptly from the sea, with a few coco and date-palms planted around. In rear and to right and left of the town, conical hills, coloured red, others black, irregular and flat-topped, rise from successive red and black terraced plains of lava; all this is perfectly barren and dreadful looking; but in the distance, a few miles away, is a chain of mountains some thousands of feet high, which, as the sun breaks through the clouds which cover their summits, are tinted refreshingly blue-green, pleasantly suggestive of other things than the adjective afore-mentioned, and, appropriate to the foreground. The town is small, clean, and respectable; a central plaza, with good houses around, from which branch off three streets of one-storied houses occupied by negroes, who are a very fine lot, and compose nearly the whole population.

We went quail-shooting one day, and walked over an odd country, flat plains of lava covered with stones, cut deeply with ravines, or swelling in barren hills. Our way led through a low sterile valley, deep in dust, intense in heat, and "ten-dollar thirst"-giving, confined between low sandy hills and cliffs. Here, too, were several fine Báobab trees of enormous girth, the diameter of the largest being over thirteen feet. More inland a sprinkling of short grass appeared, and a convolvulus, which straggles over the ground in purple flower, giving the blue-green tinge to the distant mountains.

In one of these ravines the English vice-consul—a Portuguese—had a bungalow and a lovely garden, shut in by steep bush-clad banks, some hundred feet in height. On an artificial terrace half-way up the bank stood the cottage, surrounded by a verandah hung with flowering creepers, while all round were tall coco-palms bearing large clusters of nuts; fine old tamarinds; orange-trees laden

with green fruit; pink oleanders; laburnums, yellow with pendent flower; ginger, scented jessamine, wild verbena, roses, geraniums; bananas, with great bunches of luscious fruit; and over the brook, which rippled through the ravine, drooped fringing bamboos and weeping-willows. An oasis indeed after the barrenness of the rolling plateaus above. And here we came back, after a long tramp, with few quail, but much hunger and thirst. We luncheoned under the tamarinds, while nigger boys climbed up cocos and knocked down nuts, others plucked bananas and oranges, and brought a bottle of wine from Mrs. Consul, who was in bed with fever. Ah! there goes the romance flying away with a word, for fever is common and epidemic here. We sent her our thanks and quails.

Beneath us, laughing, short-kilted negresses were washing in the stream, over which, and among the flowers, bright red dragonflies and butterflies, black and yellow, were flitting in swarms.

Two hawks—a sparrow-hawk and falcon—and a large kingfisher are very common. The last are beautiful birds, with bright blue plumage, snow-white breasts passing into amber, red bills and feet; they are very tame, and many were shot in the cause of science. The quail are small, scarce, and wild; and with three guns we only bagged eight brace. But one of our officers, who was here before during the proper season, says that they were then as thick as possible, and great bags were made. We saw great flocks of guinea-fowl, very wild, and quite unapproachable.

Another day a large party, riding donkeys and horses, and accompanied by nigger boys carrying ammunition and luncheon, went to see a valley of which we had heard. After a few miles of barren, brown country, we rode over plains and hilly ground sprinkled with grass, and the castor-oil shrub growing abundantly in sheltered gullies. Half way to the valley my donkey—a most wretched specimen—totally refused to budge an inch further,

previous to which decisive step he had never got out of a walk, in spite of a spur, which I used perhaps rather cruelly, but encouraged by the small owner of the animal—a sharp little nigger—who after every dig laughingly exclaimed, “Ho yaas, verr goot, ho yaas,” followed by whack! whack! from a stick in his hand, with which he belaboured this inanimate brute from behind, my remonstrances only producing a cheery “He no carey, no carey he,” and truly he did not. Fortunately there was a spare donkey which a nigger, carrying our things, was riding; so him, sulky and indignant, I made dismount, and thereafter kept up with the rest of the party.

At a group of huts I observed a form of salutation among the blacks which was new to me. On meeting they tickled the palms of each other's outstretched hands, then carried their hands to their noses, gave that extremely broad feature a tap, at the same time making a bob of a curtsy, all which they did with the greatest solemnity. I watched an old lady standing at the door of her hut, surrounded by half a dozen of her daughters, tall, well-made damsels, scantily clothed, who were receiving and returning this complicated salutation from every passer-by; and a most amusing scene it was.

After jogging about six miles along dirty roads, and now and then through bush-clad country, we turned the flank of a high range of green hills which had been on our left, and suddenly found ourselves at the entrance of a beautiful glen, penetrating deep into the hills, bounded on either side by lofty jagged cliffs, while away ahead it seemed blocked by yet higher precipitous peaks, from which a spur shot out, terminating in the middle of the glen in a grand pyramidal-shaped block, capped by a ragged black pinnacle several hundred feet in height. A clear stream flowed rapidly down the bed, which was covered with grass, bush, and trees of the most brilliant green colouring, extending half-way up the cliffs, the black basalt rocks jutting out from them in striking contrast. Blue rock-

pigeons were flying about in flocks, settling on the fields or banks of the stream, where a few were shot.

We rode up this glen by a muddy road, fringed with castor-oil and other shrubs, past the pinnacled rock, till we came to huts, palms, bananas, and small cultivated patches. The negroes pointed us out a "*casa blanca*" on the opposite side of the gorge, where we went and found a clean little inn—I suppose it was—kept by an old Portugee, with a number of dusky women and children about. We luncheoned off eggs, port wine, and our own eatables, while the rain came down in torrents. Pine-apples were in great abundance and delicious, so we each ate two or three. Perhaps you don't know that there is no safer fruit to eat in quantity than pine-apples? Such, anyway, is my experience. A handsome tame "*demoiselle crane*" was stalking about in the back-yard, looking the very essence of all things wet in the rain.

And then we returned, not getting on board the ship till seven o'clock, when we found her under way.

The Captain on the road back shot a guinea-fowl, much to the exasperation of two men who had stayed behind trying to get a shot at them all day long, and just as they were going at last to get this one, bang went the Captain's gun, who had not been after them at all. A party of officers and men went away "seining" twice on a sandy beach to the left of the town, and got great hauls of a variety of fish, big grey mullet, garfish, &c., and a shark about twelve feet long. Darwin's was the only account of this island we had on board; he gives a much more gloomy description of the place during the dry season, which it was when he was here, than it deserves at the present wet season. We enjoyed it very much. The negro population is a particularly fine one, and in the early mornings there was a picturesque assembly—worth seeing—of young negresses and donkeys at a well close to the town, where the pitchers and barrels, slung over the donkeys' backs, were filled.

The pinnacle went dredging to try to find pink coral, of which we heard there is a small trade from here, but though some rather inferior red coral was got, we found no pink. The temperature of this coral ground was 52° in eighty fathoms of water, which is the same temperature as in the Mediterranean, where the red and pink coral best grows.

We left St. Iago on August the 9th, steering to the south-east, and taking the usual soundings, &c., till the third degree of north latitude, when we steered westward to our destination—St. Paul's Rocks.

On the night of the 14th the sea was most gloriously phosphorescent, to a degree unequalled in our experience. A fresh breeze was blowing, and every wave and wavelet as far as one could see from the ship on all sides to the distant horizon flashed brightly as they broke, while above the horizon hung a faint but visible white light. Astern of the ship, deep down where the keel cut the water, glowed a broad band of blue, emerald-green light, from which came streaming up, or floated on the surface, myriads of yellow sparks, which glittered and sparkled against the brilliant cloud-light below, until both mingled and died out astern far away in our wake. Ahead of the ship, where the old bluff bows of the *Challenger* went ploughing and churning through the sea, there was light enough to read the smallest print with ease. It was as if the "milky way," as seen through a telescope, "scattered in millions like glittering dust," had dropped down on the ocean, and we were sailing through it. That is, if you will, a far-fetched comparison; but a more or less true one all the same. This bright cloud-light below the surface we thought was caused by fishes' spawn, through a belt of which we passed for two or three days, and the sparks by the larvæ of crabs, with both of which the towing-net was full.¹

¹ A mistake—discovered afterwards. As we—unscientific people—have all seen phosphorescence in the sea, and have all, doubtless, wondered

We sounded 13 times, dredged once, and trawled 4 times, for we have almost given up the dredge altogether, the trawl proving so much more successful. Fish were always caught, and among them was usually a new species or two. Red shrimps invariably appear, large and small, all of the most brilliant crimson-red colour; many of these are quite unknown to science. Twice we have got "holothurians"—lumps of purple gristle—and starfish, from depths of 2,500 fms.; these, of course, must live at the bottom, but whereabouts the fish and shrimps enjoy their existence is not with any certainty made out, for, of course, the trawl might catch them while sinking or being lifted up at any intermediate depth.

We have found *all* the foraminiferæ, which science (young as yet in these matters) said lived at, and only at the bottom, alive at small depths below the surface, and sometimes on the surface. A towing-net sunk to 50 fms. will come up teeming with small crustaceans, foraminiferæ, &c., when there is nothing on the actual surface.

A trawling in 1,800 fms. resulted in several starfish; two fish, one small kind having a thin membrane of skin covering the eyes, the other a new and most hideous species of mudfish; a number of crimson shrimps; an *umbellularia*, the fourth one we have now found, but not a very fine specimen; a crinoid; a sea-urchin with long spines; worms, new or very rare, &c.

The Professor, having previously made a bet with the mess generally that we should not get another *umbellularia*, to-night, at dinner, paid the penalty in champagne "all round." The trawl is a fruitful source of innocent betting; we bet each other glasses of sherry and bitters, that no starfish, or no worms, or no sea-urchin comes up, and this stimulates whatever excitement we may have in the day's results.

On August the 27th we sighted St. Paul's Rocks, steamed what produced it, I have said a word or two on this subject in the last chapter.

to leeward of them, and as there is no anchorage, sent boats with ropes and hawsers to the rocks, wound a rope round and round a bit of rock, made a hawser fast to that rope, and swung to it with a length of 75 fms. of hawser, 104 fms. of water under our bows, and there we comfortably lay for a day and two nights, made fast to a pinnacle of rock in the middle of the Atlantic!—something no other ship has ever done here before.

St. Paul's Rocks are a cluster of five separate craggy rocks, all lying close together in horse-shoe shape, the highest being about sixty feet high, which, as are also two other peaks rather less high, is coloured white from the birds, "boobies" and "noddies," which were sitting about on the rocks, flying over the ship, and close over the water, in thousands. The sea lashed along the weather side, tearing in foaming torrents through the openings, and dashing up clouds of spray. For these rocks lie right in the "equatorial current," which rushes past at the rate of three knots an hour; against this and the S.E. trade-wind our boats could make no headway, and one, having inadvertently got out of the friendly shelter of the rocks, was swept some distance to leeward.

Across a small cove a rope was stretched above water, made fast to which we fished that night from our boats. Excellent and most exciting fishing it was, excepting for the sharks, which were most exasperating, bolting off with the hooks in a hopelessly irresistible manner. "Cavalli" were almost the only kind of fish caught, great big fellows and strong as horses. We also caught numbers of most unwelcome young sharks, too feeble to run away with the line, and then suddenly one felt a tremendous tug, nearly jerking our arms off, and away went the line through your fingers, hot as fire, until you took a turn with the line round something as the only chance of saving anything. Snap! and off goes a fine hock, bait, and any number of fathoms of fishing-line; but as we saw sharks from twelve to a few more feet long, this was not surprising. It was

great fun hauling in fish as fast as we could, and we stayed there till the small hours of the morning.

Next day all hands landed—some to fish, some to take magnetic and sun observations. We landed inside the cove, which, although there was some tumble of a sea, was easy enough. Boobies and noddies were thick in some places, and anything more stupid and ridiculous than they were! Flying bang into one's face, or letting themselves be caught or shoved about, with no idea of flying away, but only uttering an indignant scream. Eggs were lying about all over the rocks, some in nests built of seaweed, cleverly stuck on and out from the face of the rock, and covered with a coating of hard white stuff, stalactites of which hung down all round. Bah! how they smelt, these birds and their nests, which were full of insects and surrounded by the remains of small fish. But more usually the eggs were laid on the hard, bare rock, in ones or twos, never more, one only being the most common; the same nests, by the way, seem to be used year after year. At one spot several old boobies were squatting, which as I came up to them gravely ejected flying-fish fry from their stomachs and bills, screaming threateningly the while, as if making room for me there instead of the disgorged fish. In spite of sundry severe pecks I pushed them aside and found beneath small balls of white fluff, which glared fiercely and pecked feebly at me, though they were only just out of the egg. Several other fluff balls were lying about by themselves, whose parents perhaps were fishing for them at sea.

The fishing from the rocks was capital, and we had only to throw in a hand-line and baited hook to catch a "cavalli," or gaily-coloured "parrot-fish," at once. The thickness of line did not the least matter, a crowd rushed at it instantly. Some of us fished with rods and had excellent sport.

But the crabs, those cheeky, exasperating, but intensely amusing crabs! They swarm all over the rocks—every-

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where—one instant invisible, hiding in the cracks and crannies, the next appearing, stealing up behind you and clawing a piece of bait or fish, much larger than themselves, and quietly making off. Catch a fish, throw it behind you, and presently a score of crabs are seen advancing warily, though not a crab may have been visible the second before.

And I solemnly declare I saw an ancient, crusty-coated crab come in the course of his peregrinations to a crack some two feet wide at least, which, after girding up his loins, he deliberately jumped.

Frighten an old noddy from her nest, and a crab will at once sneak up sideways, looking at you fixedly the while with its long stalked eyes, claw the disgorged fish, and make away with it rapidly; chase it, and it is off like a shot, dropping the spoils.

Some of us thought the crabs probably ate the young birds, but I saw no proof of this; on the contrary, I saw many unattended balls of fluff, and no crabs were at them. Neither, I imagine, can they crack the eggs; perhaps they manage it, however, somehow, for their cunning exceeds belief.

If they are thrown into the sea, their efforts are frantic to reach the land, evidently knowing where safety lies; but you must first catch your crab, which is, however, impossible, unless you can first maim it by a blow of a stick, or somehow. How hot and exasperated I got chasing them; how I didn't swear; how sitting down I soon saw one eye, and then one claw, and then the other eye appear over a ledge of rock; how it watched me; how I remained breathless and still; how I then slyly drew my stick along, and how, finally, I violently struck at it; and how, after all, I only stung my arm and didn't touch the crab! How, after cutting nice strips off a fish for bait, I after a few minutes turned round and found it all stolen; how I saw the robbers disappearing into cracks; how I threw my stick at one, and struck it by a piece of good

luck ; with what joy I threw it into the sea, and saw the fish rush at and devour it. Ha ! revenge is sweet.

The pools on the rocks were full of little "serjeant-majors"—barred yellow and black—and other wee fish with brown bodies, yellow fins, and tails ; while crabs, young and old, were feeding quietly at the bottom. The fishing from the rocks was more successful than from the boats, as the sharks did not bother. The lobster-pots which we sunk in the cove caught small crayfish.

There has been some talk about building a lighthouse on these rocks in memory of Maury ; but though there is a sufficiently good site for one, the building materials, provisions, and fresh water would all have to be brought.

The next morning another fishing-party landed, while the ship cast off her hawser and went round the rocks sounding. Various depths up to 1,350 fms. were found within four miles of the rocks, which spring up from beneath in pinnacle form. As we lay, made fast to the rocks, we dredged and got many good things.

We then went on to Fernando Noronha, and the question whether that island was connected with St. Paul's Rocks was settled in the negative by finding 2,475 fms. of water half-way between the two. In this sounding we found the coldest bottom water that we have yet come across—32°·4—the usual temperature at that and lower depths being about 35°. The bottom temperature had already been getting unusually cold in the last two soundings, and continued to be so in three subsequent soundings, which all goes to prove the theory of the bottom water coming from the Antarctic and spreading right away up north : the revolution of the earth tending to swing it towards the western side, thereby making the bottom water in the west colder than in the east. In the N. Atlantic we did find the bottom temperature about $\frac{1}{2}^{\circ}$ colder in the western side than in the eastern, and in our last section from east to west we found it about 3° colder. But then some people will tell you that the N. Atlantic Ocean is a mere gulf, a

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pond, comparatively speaking, wherein all physical movements of the water are purely local, and that properly to comprehend the physics of the Ocean one must ignore it altogether, drop it like a hot potato, and go to the Pacific and other oceans to learn properly and comprehend old Ocean's laws and eccentricities. All of which when we have finished our weary work we shall know more about, it is to hoped.

On Sept. the 1st we arrived at Fernando Noronha, a pretty green little island from whose wooded hills shoot here and there grey pinnacles of rock. One of these in particular is of curious shape and a thousand feet high. This island belongs to Brazil, and is used as a convict settlement, there being now thirteen hundred convicts, who live in little wooden huts, which, with barracks for two hundred soldiers, prisons, and an ancient fort, make up the cheery settlement. The Governor on being visited by the Captain, appeared to be much puzzled about us. "Was that the English flag? Were we a man-of-war?" and other curious questions. He was evidently confused and perturbed in spirit because we did not salute, and our explanation that we had only two guns, produced all the more confusion as to how we *could* be a man-of-war. However, he was very civil, gave us leave to do what we liked, and offered to lend us horses. But next morning he had changed his mind, would allow no survey to be carried on, even refusing leave for the naturalists or anybody else to rummage the island in search of butterflies, beetles, and plants! What sinister motive was ascribed to us this Brazilian governor alone can say, for officers from other ships have never been vetoed before. So, as there was nothing to be done, we left, in dudgeon, of which I was mighty glad, as it was a stupid little place, and the original intention had been to stay there ten days or so. Pigeons in great numbers were seen in the woods, so if one was allowed to shoot, good sport might be easily obtained.

The pinnacle dredged along the shore, from which rose

steep high banks covered with foliage of a most vivid green, broken occasionally by the face of a cliff, against which fluttered numbers of "tropic-birds," several of which we caught in a small adjoining islet as they came out of holes where they breed. The landing is not easy, and one of our boats was capsized in the surf—sextants, theodolites, watches, officers, and men, all tumbling into the water.

Boats are not allowed on the island for fear of convicts escaping, but the convicts are allowed to paddle about in "catamarans" and catch fish. The catamarans are made of three small logs lashed together, turned up at the ends. In the middle is a four-legged stool for the man to sit on, and a basket for the fish he catches. They look extremely odd coming out to fish, a number of these convicts all standing up and paddling with a thing like a long-handled spade, and as at a little distance the catamarans are invisible, the men look as if they are gliding over the sea with motionless legs, while their arms and paddles are in violent motion. They say that the convicts do sometimes try to escape to the mainland of South America in these cockle-shell rafts, and have been known in one or two cases to arrive safely.

We sailed from Fernando Noronha on the 3rd, and sighted the land to the south and not far from Cape St. Roque on the 6th; from there we kept close to the land, which we saw almost every day till we arrived at Bahia on the 14th. We passed close to Pernambuco, thus completing the line of soundings over which a cable will soon be laid to that place. We trawled a great deal in depths varying from 30 to 1,600 fms., and with great success. Numbers of fish—many quite new; a few beautiful crinoids, enormous coarse sponges, and large blocks of a reef-forming coral,¹ of convex-shape, measuring 2 ft. across in diameter, and interesting as proving the "existence of massive reef-forming corals at so great a depth as 30 fms."

We have had so much calm weather and consequently

¹ *Heliastrea cavernosa*.

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steaming, that when within sight of Bahia, as we were steaming along, it was reported from the engine-room that not a pound of coal was left ; so there we had to lie all day within sight of our harbour, with letters and papers awaiting us, till the evening, when the sea breeze came rushing along, and we sailed quickly in. While we were lying motionless off the land a swarm of butterflies came fluttering around us in thousands, almost all of one kind. The expression is not mine, but it is scarcely an exaggeration to say that "it snowed butterflies."

Shall I tell you something about a Brazilian town, Brazilian rivers, forests, negresses, and birds ? The town of Bahia is from the harbour beautiful ; partly built on the face of a high steep bank, which, as it recedes on either side of the town, is covered with tropical vegetation, among which palms, bananas, huge aloes, and mangoes are visible. Red roofs, church-spires and domes, yellow walls and coco-palms stand out on the top of the bank ; all glitter, light, and colour against a deep blue sky. The town of Bahia from the streets is not so beautiful, and is, to put it mildly, extremely odoriferous. The business portion of the town consists of two fine streets at the bottom of the bank, where are excellent shops and a considerable trade from the wharves. Here too is the market, a bewildering place, teeming with tropical productions of every sort and kind—parrots, birds, fish, monkeys, negroes and negresses, Brazees and Europeans, shrieks, smells, and hubbub indescribable. Charming green and yellow parrots ; brilliant small birds from all scarlet, or all blue, to all black ; beloved little marmoset monkeys, with long hair and tails, and tiny deprecating faces ; lovely little green paroquets, horrid sloths, fussy ant-eaters, large heaps of oranges, pine-apples, coco-nuts, guavas, mangoes, bananas, sugar-cane—of which every blackamoor is chewing a stick—dirt, smells, and visions of fever. From that part of the town lying at the foot of the bank, we can be carried in sedan chairs up the steep hill by a couple of negroes, and arrived at the top we

find more town, more smells, a great many churches, large "plazas," and presently we come to a pretty public garden overlooking the high bank and harbour with its hundreds of vessels, and a profiled view of the town. Large shady mangoes, statues, parapets, flowering aloes and flowers, vistas of white-stemmed cabbage-palms, and a large aviary, full of beautiful birds—but the whole thing is rather poor compared to what it might be made. Then a suburb of handsome villas, a great rage evident for statues, which are on tops of houses and gates and everywhere; as also for trim little gardens blazing with flowers and creepers. The heat is great, but that is compensated for by finding a German hotel, with two pretty German girls as barmaids, refreshing beer, cool rooms, and a bowling-alley.

I can't say much for the general look of the population; the blacks are not such fine people as we have been seeing lately; the Brazees look yellow and washed out, and not a pretty face is to be seen in the streets, nor in the theatre—a good house with a painful company. There are, however, a great many English and Germans, and they redeem the look of the population vastly. You know that slavery still exists in Brazil, though in the mildest possible form, and it is being done away with gradually. All children born after a certain date (a few years ago) are free, and slaves are allowed to buy their freedom very cheaply. They work on the sugar plantations, and we saw a few on the wharves; but they say the slave-owners themselves are against the system of slavery, and treat their slaves well on the whole.

And now for a glimpse of railway and the interior. At the railway station we saw the superintendent—a most civil Englishman—who advised us where to go, telegraphed up the line for a guide and a room to be ready at a certain station, gave us a free pass, and sent a servant with us taking bread and coffee. We then got into the train, whose one first-class carriage was chiefly composed of canework, while the second-class carriages resembled

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cattle-vans, and were full of smoking negroes and gaily-attired negresses. With us were some Brazee sugar-planters going up to their estates. The line ran along the shores of the bay for a while, then struck inland through low country, covered everywhere with woods. We passed clumps of cocos, grouped under which were negro huts; passed bits of water, in which we were told crocodiles live, but saw none; passed frequent small stations where our darkie passengers got in and out. The guard fried ham and eggs for us while the train rolled slowly on, the vegetation, meantime, becoming wilder and more tangled, and the woods thicker, till we arrived at our destination—a station, and a small negro village, surrounded by thick green jungle and trees.

Sallying out at once with our guns and butterfly-nets, we got carried two miles back on the line by an engine, to where there was a river and primæval wood. Here we roamed about catching butterflies—gorgeous creatures flying with a strong jerky flight, very different from those at home—shooting birds, and watching an occasional humming-bird dart past an open glade. The wood was no higher than many in Scotland, the trees of no great thickness, and quite easy to walk among, only be careful where you place your foot, or you may go up to your knees in swamp; careful on what you place your hand, for there may be a snake there; and careful of your gun, for creepers are twining about, tripping one up.

But life in this wood was disappointingly scarce, so we turned and kept along the river, here flowing sluggishly through a belt of grass and swamp, while on the other side rose a bank of foliage, among which here and there gleamed a crimson flowering orchid. From this same river came many of those strange and brightly coloured fish which Agassiz collected in Brazil. Still seeing little to reward our search, we returned to the railway, and walked along it towards Bahia. Thick bush and trees lined the low embankment on either side, high ground and woods

rose on our left, and away to the right we looked over a jungle of matted vegetation, above which sprung here and there a clump of trees, and some way off a dark green wall of forest.

Presently we came to a low densely foliated tree growing at the foot of the embankment, covered with purple blossom, among which humming-birds were flitting in numbers, jerking about from flower to flower, inserting their long bills and tongues, catching insects while remaining stationary on rapidly vibrating wing before each separate flower. It was a rarely beautiful sight to watch, utterly indifferent to our presence as they were, though we were only a few yards from them.

And now what do you think we did? I hardly dare tell you.

We sat down on a sleeper, loaded the gun with No. 7 shot (it was the only size we had), and proceeded to "massacre the innocents," successfully, too, marvellous to relate. We killed several of six (I think) different species, and did not damage them much; we shot many more, but they either stuck in the foliage or else could not be found in the shrubbery and dark shadow beneath the tree. Ruby-throated; emerald throated; a tiny dull-red bird with a long beak, and body no larger than a hornet's—a wee, wee thing; a dark-green fellow with two ruby tippets above the ears; a little black creature; and a larger one than the others—blue-green and black with a long tail. We saw others, but it is hard to make out details, for they flit and jerk about so rapidly that a fresh metallic tint seems to flash out in every new position. Shocking, shocking, the whole proceeding, was it not? but all done in the cause of science.

Continuing our walk, we came to a station and a few huts, where we refreshed ourselves with country wine. One wants that sort of thing, I can tell you, after walking all day under an unclouded Brazilian sky. While sitting here the village belle came in: picture to yourself a clear-

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skinned, dark young girl, tall, lithe, and pretty, wearing a limp, yellow gown, a white shawl with broad Indian border, crisp woolly hair done up in the form of a small turban, grinning mouth filled with perfect teeth, round laughing eyes, a necklace of glass beads round her open throat, and good nature stamped on every feature. What more do you want? She bought, I think, some butter, strode away, and I shall never, never see her any more.

But the sun is down, darkness deepens, twilight there is none, and an engine waits to carry us back to our station. We rattle back, and in the white-washed waiting-room find two cane sofas for beds, a table, and lamp, all looking very cozy. We open our tins of "paté of game," one of which (a rare case) turned out to be bad, so it was offered to a pretty little negro boy who had come in to see the lions feed, but fortunately for him, being at the shy age of five years or so, he refused it, so it was offered to and accepted by another visitor, a sharp little dog, common in these parts, and universally called a *sabé todo*; he *sabé'd* it at once, went off with it like a shot, and for an hour we saw his face no more. Then our servant brings in coffee, fried eggs, and bread, so with a bottle of wine we had brought, and game paté, we were not much to be pitied, were we?

Afterwards we strolled out into the cool, calm darkness, smoked cigars, sat down by a fire outside a hut, round which black urchins with gleaming white teeth and eyes were sitting, whistling fiendish whistles through rolled-up leaves of the sugar-cane, which we tried also to do, but failed, much to their delight; went among the huts, watched through open doors and windows noisy negroes and negresses, got barked at by *sabé-todos*, hustled by black pigs, caught the fireflies sparkling among the grass and trees, listened to the crickets' *cric, cric*, heard the marsh frogs' ceaseless croaking, and flirted in an unknown tongue with laughing negresses,—such shrill laughter and shriller voices! But now we must go to bed, *haking*

earnest intentions of early rising. Then we sleep; several times I am awake, once by a musquito trumpeting in my ear, once by a distant rumbling, accompanied by the notes of a flageolet; I sit up in my bed, look out of my window, what can it be? rumble, rumble, tootle, tootle, and a trolly goes swiftly past on the line, worked by darkie figures; and more than once by the shrill laughter of the women sounding so close that I feel certain they must be looking in at the window; but no, they are not, and when I next awake it is daylight, and our guide shaking at me through the window.

The first thing I saw were two humming-birds flitting about a bush covered with yellow flower just outside the door. I stalked up with a butterfly-net and tried to bag them, but failed, got laughed at, too, by the guide, confound him! The next thing I noticed was that at the door of every hut a negress was sitting sewing, and the next, the number of pigs and children cruising around. The sun was not yet up, and the air was delicious; birds chirping loudly, and flying about catching their breakfast.

Then we walked down the line with the guide, a very good fellow, as black as my hat, good features, well and strongly made, grizzled moustache and beard, broad-brimmed Panama hat, white trousers rolled up to the knees, barefooted, and carrying in his hand a sharp cutlass, with which to cut your way through the bush, or clear away some entwining creeper, or cut down an orchid from overhead, or open a coco-nut, or cut open your head:—anything and everything is done with this wonderful cutlass.

As we walk along we catch butterflies and shoot any birds we see. Such birds! such colour! First comes one called "bullock's blood," head, breast, and back a deep red crimson, wings and tail an intensely glossy black—very much like red and black velvet; another rather smaller, light turquoise blue with a black throat, and bar across the back; another called "the cardinal," though the first

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described would compare better with its American namesake, light-grey plumage and bright red head; "bee-eaters," with long curved bills and whole colouring of a sheeny-green shot with purple; and to see them flash past as the rising sun strikes on their lustrous plumage! Then, too, there was a fat, chubby little canary, very puffy and pretty, the yellow relieved by rich green on the back; humming-birds—all jewelled—flitting and whirring among the flowering bushes; a bird like a large lark of a tawny colour, which "danced like a withered leaf before the king;" a handsome white and brown bird, called here the "washerwoman," because it frequents the banks of rivers; and besides these there are many more, hawks, both large and small, dark plumaged kingfishers, and there! look! as two green parrots fly screaming by overhead, and disappear into the forest.

We pass our humming-bird tree again, but don't shoot this time; then leave the line and strike through the wood by a path up the hill on our left.

And what think you we are after? Toucans.

An eerie and beautiful wood it was, high but not large trees, a green cloud overhead, now and then breaking, when a flood of sunshine came pouring down on grass and ferns, and lovely stemless palms, and then again it closed and shadowed an undergrowth of thin scrub, networks of brown trailing creepers, and gaunt tree stems springing up thickly everywhere; gloom and silence all round, broken now and again by the harsh cry of a bird, which makes our guide stop—*tssh, tssh, toucan, toucan!*

Onward we cautiously creep, trying to get a peep at the higher branches overhead, but seldom succeeding, so thick are the lower branches, foliage, and twining creepers; on we creep, still peering above us, not daring to whisper even, wondering what *that* bird is that burst out now and then with loud, liquid, thrush-like notes; what *that* bird is as the twang of a harsh gong booms out from the green cloud somewhere; and what's this? as a large airy,

bat-like creature flaps slowly across my face, and not till we see it settling on a creeper, do we understand that it is a huge moth—weird dusky beasts, flying ghostlike out from the gloom and vanishing, mimicking so exactly the colour of the dark tree trunks and creepers, that when alighting on them and closing their wings, they are quite invisible. We tried to catch them with the butterfly-net, but utterly in vain, for with one flap of their great wings they are off, disappearing mysteriously among some dark tangle of rattans, where you may look about for them, and, as in despair, you turn to go, lo! the moth flaps away from the very spot at which you had been looking intently for several minutes, and which, if you did see, you mistook probably for a dead leaf or lichen.

And what are these? as we come across a number of large basin-shaped holes in the ground, at the bottom of which are smaller holes: the abodes of armadillos, all of which to our tender inquiries replied "not at home," which was very unlucky. They dig them out with spades, but experience is necessary, for they burrow under and away from you faster than you can dig, and unless you have learnt to know in what direction they are burrowing, they will beat you. Our guide told us that he knew by smelling, whether armadillos were in their holes or not, and, indeed, he did knuckle down and smell at every one. And here's a long string of big red ants, each carrying a green leaf, filing along a smooth-trodden ant-path which crosses ours.

Now again we come to a more open spot, and in the green cloud overhead we hear toucans, and can see them among the very highest branches, and consequently too far off for range. Presently M., who is standing on the path and happens to have the gun, fires, and away through the bushes runs our guide, bringing back a splendid toucan. How we exulted and how excited we were! He got another shot and I got one, both of us bringing leaves and branches down from all round the birds, which could

evidently stomach lots of cold lead, and so flew off. We could not follow, for it was time to go back and catch the one train during the day to Bahia, which we did through pouring rain.

The least thing startles one in these dark, silent, ghostly woods; while walking along I was startled when stepping over a low bush, at *something* nipping me smartly in the back: with a loud shuddering oh! I sprang forward several feet at least, feeling instantly convinced that I had been bitten by a snake, or a tarantula, or a centipede, or a millepede, or by something else dreadful. I turned round -- only to see my companion's face convulsed with laughter, in which, after a spasm of irritation, I was able to join. It was a small twig which had sprung up and hit me, that was all! Which reminds me how once upon a time, in my youth, and in a West Indian island, I, like a young ass, was climbing up a tree, when something black, and looking as large as a bird, darted at my eye, struck it, stung it. I dropped down far quicker than I had come up, and by the time I had rushed frantically into the drawing-room of a black gentleman's wife and family, my eyelid was the size of a prize potato, which potato was kindly washed by black wife and family, who informed me that it was "*only* a Jack Spaniard." "Oh," said I, "was that *all*!" And so ends that cruise.

Would you like to hear of another? This time it was up a river. We start from the town in a small English steamer, for which we are again given free passes by the English companies, who own whatever is go-ahead and enterprising in Bahia, and after two hours' steaming across the large gulf, we enter the river, running through pretty scenery, narrowing occasionally to a couple of hundred yards, the steamer keeping close to the shelving banks, or broadening into a large lake-like expanse of water, bounded by green hills or low ground, beyond which the landscape stretched away, getting bluer and bluer till it terminated against the sky in a chain of distant hills. In

the narrower reaches a belt of mangrove fringes the river's edge, behind which rise steeply the hills covered with wild vegetation, palms of several varieties rearing their feathery crowns above the dense undergrowth, and waving in the breeze, flickering back the flood of light poured down by the blazing sun. The mass of green is here and there broken by the face of a dark red cliff overhung with trailers, or by a brown hut peeping out from the foliage, looking like some huge bird's nest, with black piccaninnies playing about.

We pass pretty little valleys opening on to the river, where, by the water's side, are grouped a few negro huts backed by shrubbery, palms, bread-fruit, mangoes, and bananas; pass a dismantled old fort which once commanded the river; pass sugar-mills and plantations; pass odd-looking houses built on the very edge of the river, the water lapping their buttressed walls, and so on for two hours. No high hills and no forest. I had been in hopes of seeing some narrow bit of river with thick forest springing up from either bank, impenetrable, with monkeys among the branches, and marvellous orchids; and on the muddy banks, crocodiles basking. Every now and then the steamer stopped, and a canoe, or a fleet of them, would paddle alongside, and embark or disembark somebody. These canoes are paddled by two men standing up, and are broad, heavy, safe affairs, with sometimes a chair, on which sits a black-robed, yellow-visaged old padre, or a yellow old planter, or a black or a brown-a-moor.

At length we saw a town ahead, and there we stopped, for the steamer went no further. Two steps brought us to a small hotel, where a young engineer welcomes us, he having been asked by his senior in Bahia to be civil. We lean over the verandah and watch the steamer being unloaded below us, and strings of mules being packed by cut-throat-looking fellows wearing broad-brimmed *sombreros*. A stream of blacks are passing in and out from the boat, carrying cargo on their heads; and watch those

two negresses quarrelling over a box, screaming, expostulating, gesticulating, throwing their whole persons at each other, brandishing and clapping their arms and hands, kicking the air and stamping on the deck. "I'll bash you!" says the one. "And I'll mash you!" retorts the other. But they never touch each other; oh, no! they take good care to stop well short of that.

A good-looking young negress, gaily attired, is pointed out to us as being a slave, whom her master occasionally beats severely, and so she is trying hard to earn, somehow, her redemption-money.

It is a pretty view from this verandah; the river—here some three hundred yards wide—running between green hills, which soon shut it in, up stream and down, while the town nestles at their foot on the river's banks, and in mid-stream is an island planted with coco-palms. Canoes perpetually paddle or sail from bank to bank, or go shooting past with the current.

We then strolled through the town, consisting of one or two streets of good two-storied houses, merging into a long broad one of small negro and Brazee houses, and in the centre a railway—the only portion of the street which is kept in order, the remainder being a quagmire more or less. At every window and doorstep sit negroes and negresses, dogs, children, and parrots—dear old birds with green plumage and yellow faces, sitting there solemnly, all fluffy and fat. In the upper windows of the Brazee houses the ladies are lolling, black-haired, yellow-faced, dark-eyed. Their greatest excitement in life seems to be thus lounging out of the windows, varied occasionally by banging at a spinet.

And so we passed out of the town, keeping along the railway track for a while, coming soon to a green swamp, from which proceeded the most agonising sounds, as though of a horde of famished, bass-voiced old cats, only more deep and solemn. Cats? they can't be; nothing is visible but swarms of fire-flies flickering among the tall reed-grass

in the now rapidly deepening twilight. But they were frogs, not cats; frogs, moreover, with vermilion stomachs! How we laughed as *miow! miow!* came peeling up all round us!

"From behind that tree," says our friend, pointing to a large one close at hand, "a man was shot a week ago." "Oh! was he?" say we, and propose, seeing that it is getting dark, that we now go back, which we do, to dinner, and then to sleep, in a barn-like place, whose room partitions only ran a short distance up, which was innocent of ceiling, and where, all night long, bats cheeped and flapped against the roof, and strange things now and then fell down on us, and other people's snorings echoed and rolled sonorously from room to room. And although I had nightmare dreams about these bats descending on me as they do on the mules, on which they inflict the most horrid wounds, I found to my joy in the morning that neither they, nor insects, had in any manner assaulted me.

The next day we rode about the beautiful country on horses and mules, entering, for a few hundred yards, into primæval forest, where we saw parrots, humming-birds, gorgeous butterflies, among which was a great lustrous blue *Morpho Rhetenor*, and all that tropical wealth of vegetation which you read of in Kingsley's West Indian book, *At Last*.

In the evening we had a delicious paddle in a canoe up the river, studded with rocks and wooded islets; between these the stream shot in little rapids, down which we swiftly floated; kingfishers darting past, and swifts skimming the water around us; stray parrots flying shrieking above; humming-birds flickering among the shrubbery on the banks, from which came the *miowing* and croaking of frogs, the songs of birds, the voices and merry laughter of dusky children, whose homes lay here and there half-buried in foliage fringing the river. A happy life surely they lead, these negroes, in a climate which, to them at least, is

perfect, where their food—bananas and cocos—grows without any trouble on their part; and farinha, tobacco, and sugar-cane, with the very smallest amount. What a contrast to our poorer classes at home!

The following morning, early, we returned to Bahia, in the steamer. Three balls in our honour were in prospect on shore, when one of the men was found to have got yellow fever, so instantly landing him, we weighed, and proceeded to sea to get with all speed into cold weather, and thus successfully avoided any chance of the fever spreading.

Leaving Bahia on Sept. the 25th, we arrived at Tristan d'Acunha on Oct. the 15th. We got several pretty heavy gales, with, to us, cold weather, heavy squalls of wind and rain cutting into our marrow-bones, warmed during the last six months in the Tropics. Splendid fair winds favoured us sometimes, and the old *Challenger* went bowling along under full sail at the rate of ten and eleven knots: but these winds were cold, so cold to us, who had been melting only ten days before under a tropical sun. But then how delicious bed was—how delicious to creep under a blanket when for months before even a sheet was unbearable!

We did not dredge often on this section, as we were in a hurry. Our first trawling in 2,150 fms. came to grief, and we lost the trawl and a quantity of rope. The next in 2,350 also failed. There had been a tremendous strain on the rope while the trawl was dragging, increased tenfold when heaving in, so much so that no one thought it could possibly come up; but it did, very slowly, still keeping to the last the unnatural strain. The beam of the trawl was in sight under water, when crack! something broke, and down, down sank the trawl, carrying with it great expectations and hearty anathemas, to which the wretched naval officer, who the whole day had been looking after its welfare, contributed largely, you may be quite sure. An iron swivel had broken just at the last moment, which

induced us to have these swivels (which originally were on the rope at every 100 fms.) entirely dispensed with, and with perfect success.

The next trawling in 2,275 fms. brought up nothing but the ear-bone of a whale and two small bits of pumice, both covered with hydroids, and of course the inevitable red shrimps. Another in 1,900 brought up nine fish, shrimps, prawns, corals, a large holothurian, one starfish, and the miserable remains of a very delicate, very much smashed sea-urchin, but that can be restored on paper. One or two of the fish are probably new, and several of them, which we had got before, were totally without eyes, but have an odd white patch on the top of the head, which may possibly act as a sensitive organ in their stead.

Albatross followed us, though the largest, the Cape-sheep, were rare, but the Cape-hens and the little Cape-pigeons we saw in numbers. We shot and caught with hook and line two Cape-hens, the largest of which was six feet nine inches across the wings.

The small towing-nets which are sunk to 100 fms., or so (while we are stationary), continue to bring up millions of small crustaceans, foraminifera, &c., a great prize being got the other day in a creature which naturalists at home thought only existed at the bottom, and they are wrong!

Tristan d'Acunha is a circular-shaped island, some nine miles in diameter, a peak rising in the centre 8,300 feet high—a fine sight, snow-covered as it is two-thirds of the way down. In the time of Napoleon a guard of our marines was sent there from the Cape; but the connection between Nap.'s being caged at St. Helena and a guard of marines occupying this island is not very obvious, is it? Anyway, that was the commencement of a settlement which has continued with varying numbers to this day, the marines having been long ago withdrawn, and now eighty-six people—men, women, and children—live here. The anchorage is on the north side of the island, and a mighty

bad one it is. A precipitous wall of cliff, rising abruptly from the sea, encircles the island, excepting where the settlement is, and there the cliff recedes and leaves a long grass slope of considerable extent covered with grey boulders. On this slope are built the cottages, which look very Scotch from the ship, with their white walls—built of large blocks of stone well cut and dove-tailed together—straw roofs, and dykes around them. Sheep, cattle, pigs, geese, ducks, and fowls they have in plenty, also potatoes and other vegetables, all of which they sell to whalers, who give them flour or money in exchange.

The appearance of the place makes one shudder; it looks so thoroughly as though it were always blowing there, which indeed it is, heavy storms continually sweeping over, killing their cattle right and left before they have time to drive them under shelter. They say they have lost 100 head of cattle lately by these storms, which kill the animals, particularly the calves, from sheer fatigue.

The settlers are a fine stolid lot of people, the women coming chiefly from the Cape and St. Helena; some are mulattos, with the result of an odd-looking mixture of white and yellow-skinned children, who get themselves off to the Cape when arrived at the years of discretion, though many of them come back; the numbers on the island being always kept up somehow. The men often go on whaling or sealing cruises with the ships that touch there, and as regards money matters are anything but a primitive people.

Two small species of albatross are common, the molly-mawk (vulgar parlance), and a "sooty":—of the first more hereafter; the sooty albatross is a dark brown, handsome bird, with a white ring round the eyes, and an orange streak along the lower mandible. There are three species of tern, the beautiful little silver-plumaged "black-capped"; a black, and a grey one; also large brown gulls, called here "dirt birds"; these and the Cape-hens pretty well complete the list of birds which fly about the ship.

On shore at this season there was nothing to be done

except to stretch our legs ; we were not allowed to go out of sight of the ship, as the wind might spring up from to seaward, and a heavy swell come tumbling in, making the anchorage anything but a safe one ; otherwise we might have gone up the mountain, where they say albatross build in the snow, and have seen birds which they describe as being almost wingless, and call woodcocks ; they being really a kind of rail. There is a small crater, and lake inside it, at the summit. Sea-elephants are occasionally seen, but are becoming scarce. They brought us off the eggs of the molly-mawk, which are good to eat though a trifle fishy ; and in the cottages I saw several eggs of the great albatross. There are rookeries of penguins on the island ; and specimens were bought by the naturalists, at what proved afterwards to be fancy prices.

We were amused by a poor old woman, hailing from Yorkshire, who wanted us to give her a passage to the Cape, imploring us all in turn to take her away. "Have ye a mither? then for the love of, &c., take me away." She came here a year ago from the Cape to see her son, and is already heartily sick of the place. But of course we could not take her with us.

They told us of two Germans, who were put on an island fifteen miles from here, some time ago ; and as they have not been over there or seen any signs of them for a long time, they fear they are ill or dead. So that evening we got under way, being hurried off by dirty-looking weather and a squall from the N.W. Before going we took in abundant and welcome supplies of beef, sheep, fowls, pigs, and potatoes for all hands. We steamed slowly over during the night, and early next morning anchored off the northern side of Inaccessible Island : a magnificent wall of black cliff, splashed green with moss and ferns, rising sheer 1,300 feet above the sea, and beneath it a strip of stony beach, about a mile in length, stretching between two bold bluffs. At the foot of the cliffs we saw a hut, and soon afterwards the two Germans ; very good

fellows they proved to be, talking capital English, and delighted to see us; we gave them a passage to the Cape, and I will send you an account of their life on the island, which is interesting.

We landed on the beach soon afterwards, a smooth sea and a fine day making the landing easy. All round these islands a field of kelp is rooted in from fifteen to twenty-six fathoms, which subdues the surf wonderfully—indeed without this natural breakwater landing would be nearly impossible. From the ship we had seen penguins on the beach, so we at once “made” for them, and found that they were the “crested gorfew,” a small species with a crest on the top of the head, the outside feathers of which, above the occiput, are yellow; back and head slate-colour, throat and breast white, short black tail, pink feet, red sharp bills—as we found to our cost—very small flappers, red eyes with small black pupils, which give them a most peculiar and vicious expression. Between the foot of the cliff and the stony beach was an earth-bank covered with long tussock grass, among which they had their nests; landing at one or two spots only from the sea, they had regular roads into the rookeries.

As you come up to a group of a hundred or more squatted on the beach, they all stare at you, then, thinking there's something wrong, all turn together as one, and go hop-hop-hopping over the large stones, their yellow crests flopping up and down, at every hop bobbing their old heads, hunching their old backs, and wobbling their flappers; away they go, hop-hopping rapidly off, stopping after every jump to recover and make sure of their equilibrium, and altogether ludicrously like a crowd of hunch-backed old men with their feet tied. But the water is the element to see them at home in; when first we landed we were very much puzzled by seeing a large, odd-looking fish leaping out of the water in shoals, and in this manner proceeding rapidly along. At last somebody said “They're penguins!” and so they were—a strange sight, truly!

Among the stems of the tall tussock grass they were sitting about in thousands on their nests, consisting of a layer of grass. As you may imagine, it was most unpleasant walking in the rookery, dreadfully dirty and horrible smells, to say nothing of the fierce digs we got in our legs, and the fiendish noise—something between the last notes of a donkey's bray and a deep-voiced sheep—a perfect roar, which is kept up night and day, and plainly audible from the ship, sounding when the air is still like the roar of a heavy surf. They never had more than two eggs, sometimes only one, larger than a Dorking's, coloured dirty-white with brown stains. The babies were all just out of the egg, black, naked, egg-shaped, palpitating little creatures. Many of the eggs were cracked by the young inside, who were poking their bills out. There were no signs of fish in the rookery, so I don't know how the young are fed: perhaps the parents disgorge choice morsels; but then one would expect to see some signs around the nests. Motherly old birds they are, awfully fierce when sitting, glaring up with wide open beak, braying hideously, and if you come near enough, biting and pecking very hard indeed. They take any number of young under their capacious breasts, and if you chuck an old thing off a nest, and consign her young to another, this last will at once take charge of them, shoving them underneath with her beak, although she has already two of her own. When their young have arrived at a certain age they take them to sea; and some of us saw, while fishing from a boat, a penguin bob up close by, which had two wee black things supported on her flappers. How the young can manage to hold on when the flappers are working I cannot imagine, as penguins do not use their feet when diving: besides which there are sharks, and the Germans tell us that they have seen penguins with their feet bitten off.

An endless stream of these penguins is perpetually coming and going, some to sea, others to their nests, others resting midway on the shore; and it is the most

laughable thing in the world to see them coming down a steep bit from the top of the bank on to the beach, a feat they perform either by waddling carefully sideways, or by straightforward jumps, looking as if they said after every jump, "Ungh! so far good! now another, ungh!" as plop they landed after every jump, looking human to the last degree with their pink feet.

The "dirt-birds" were very tame, and tremendous carnivora, swooping down at once and boldly if they see blood, and feeding ravenously off dead penguins; and it is said they kill the young penguins. They settle on the branches of low trees which at one place grow thickly on the bank beneath the cliff, as also does our old friend the "noddy." There are two kinds of small birds, a thrush,¹ very tame, allowing itself to be knocked down with a stick, and a little yellow finch,² which they called canaries, and are less tame than the thrushes.

The cliff is the finest thing in its way I have ever seen, quite inaccessible, with hundreds of mollymawks and gulls soaring about, or resting on its face. At one spot a waterfall pours over the cliff, a sheer drop of a thousand feet, and the Germans say that after heavy rains it leaps clear over the broad beach into the sea. Close to it is the hut in which they have been living, the roof and part of the wall thatched with tussock grass, on a high foundation of stones from the beach, and looking tolerably comfortable; near by was a small piggery, in which were three pigs; and a small grass-hut, wherein to store the penguins' eggs, which keep good for a long time. We had come on shore in great hopes of some pig-shooting, but they were all on the top of the cliff, and we, alas! at the bottom.

The fishing from the ship and boats was excellent, almost all the same kind of fish being caught—a rock-fish.

¹ (*Nesocichla eremita*). Common on all three islands of the group.

² (*Emberiza braziliensis*). Supposed to be extinct on Tristan Island, but common on the other two islands. The rail (*Gallinula nesiotis*) is also found on Inaccessible Island, but the Germans suppose it to be a smaller species than the Tristan one.

In the afternoon the ship steamed round the island, sounding, dredging, and taking a running survey, which had not been done before. Bold cliffs encircle it, but in some parts are not so high as those on the north side, and there it is quite practicable to get up them. That night we again anchored in the same place, the Germans coming off with their traps, first, however, burning their hut, so that the Tristan people, to whom they bear no good will, may not benefit by it in any of their seal-hunting excursions.

Under way early next morning, we steamed in a few hours over to Nightingale Island, the remaining island of the group; the continued fine weather tempting us to explore these hitherto unvisited islands, this small one being only marked with a dotted line on the chart. Four years ago two boats' crews from the Cape killed 1,700 seals on this island in a single season, which of course will frighten them away for a long time. The island looked charming from the sea, being apparently beautifully grassed, with bushes growing in the gullies. But what was our disappointment to find on closer acquaintance that the whole island was in reality covered with tall tussock grass, which concealed enormous rookeries of penguins!

A thick field of kelp, through which it was hard work to force the boat, was rooted near the shore. Landing on the steep rocks, which fringe the shores all round the island, we scrambled up their slippery sides till we came to the tussock grass, which, aided by a penguin street, we skirted, till we got on to the top of a flat bit of rock, where we sat down to cool ourselves, and watch the hundreds of penguins on the rocks close beneath us, where was their landing-place, and from whence a street led up an earth-bank into the rookeries under the tussock, from which our rock projected. While we sat here two molly-mawks quietly walked out from under the grass behind us, and stood unconcernedly by our side. They are beautiful birds, snow-white throat and breast, black wings and tail,

back of the head and neck tinted a pearly grey, a black bill with an orange streak on the upper mandible, black eyes under a straight black eyebrow, which, with a soft dark edging around the eye, gives them an odd look of half fierceness, half gentleness. This rock appeared to be a starting-point from which, coming from their nests among the grass, they took their flight. They, as well as the penguins, were nesting; their nests consisting of a cylindrical column of earth mixed with grass, about a foot high, a slight depression on top, in which was never more than one egg. It was the prettiest sight to see these handsome birds among the grass tunnels, which radiated in all directions, looking quietly dignified as they walked or sat on their high nests among the squatting, screaming penguins.

Just above us rose a grey-rock peak a thousand feet in height, and up its very steep side we began to climb; desperate hard work fighting our way through the grass, at every step having to clear away by main force the entangled stems above, below, all round; and by the time we had mounted some four hundred feet we were mighty tired and hot. The rookery extended quite one hundred feet above the sea on this steep slope, and the muscular power in these penguins' legs must be really enormous. And, by the way, we hear of penguins helping themselves to walk by their flappers, and that sometimes they might be mistaken for quadrupeds; but these never do this, except when going up so steep a bit that, without having to move out of their upright position, they do use them in a feeble way. But in any ordinary ground their position is bolt upright, and they advance by jumping.

On this hill-slope, as everywhere over the island, the ground was honeycombed with the holes of a species of black petrel, and every other step we sank up to the knees, which added much to the difficulties of our advance; we saw none of these birds alive, but a great many of their skeletons, these having probably been killed by the fierce

carriage-gulls. In digging up some of the holes with the help of a dog we caught another kind of bird, a small puffin, about the size of a "Mother Carey," which seem to appropriate these holes made by their larger brethren: we saw no puffins outside their holes.

When we had scrambled up a good height we climbed on to a boulder to see where we were—an impossibility among the grass—and saw below us, near where we landed, two seals skylarking and splashing about, throwing themselves clean out of the water. I fired at them—we had brought rifles in case of pigs—and went close at the second shot, when they vanished. Another seal, or perhaps one of those, was seen by a boat afterwards. Away on our left, skirting the hill-side and reaching to the shore, the rookery extended, a broad main street meandering through the centre and quite bare of grass, and along it the penguins were hopping, the meeting streams keeping (but not invariably) to their own—the left—side of the road. In the middle of a circular bare patch, one of our spaniels was seen howling in the most heartrending way; he had lost his master, and having run the penguin gauntlet thus far, and found a small space clear of these worse than fiends, did not dare to venture among them again. A crowd of penguins were standing all round him braying and hissing furiously.

Poor little "Boss!" his end was a sad one; his master picked him up on his way back, and for a few yards Boss followed, but then turned tail and fled like a maniac, and could not be found again. The other spaniel followed his master once through the rookery, but would not face it again, and so had to be carried; as it was he was all bloody, with regular holes dug in his flesh. But what a death! starved among these fiends he dared not face, or if he did, only to be pecked to death! But perhaps old Boss, who had only one eye, and was, it must be confessed, not much good in the shooting way, still lives a mighty hunter and eater of penguins.

But to continue : a precipice stopped us going higher, so we circled round a bit, but again were stopped, and had perforce to descend, which we were not anxious to do, as up here we were free of the penguins and their stench below. Coming down a precipitous slope, we found the grass invaluable, as it enabled us, by holding on to it, to drop and scramble down some ugly little precipices. It being impossible to see where one was going, we had only to clutch the tussock and drop, sometimes finding a footing, sometimes not ; and if so we clutched more grass, and safely descended. At the foot of the hill we crossed a corner of the rookery, and then came to a dirty puddle among the grass, round and in which mollymawks were nesting and wading. Beyond this was a wood of stunted trees, beneath which the tussock was not growing, but the ground was mossy and pitted with petrels' holes.

It was a great relief to be in a space of open ground for here there were no penguins, but numbers of mollymawks sitting on their nests, who clattered their bills, then gravely shook their heads as we came near. They have no notion of being frightened, though sometimes they will stand up when you approach, but always when doing so covering their egg with their broad webbed foot. Amongst them we lunched, and very pleasant interesting company they were. The husbands strolled about, coming and going from the tussock which fringed the wood, quietly sitting beside their wives, and kissing them in a very loving and pretty way. It was the most charming picture of bird life that I have ever seen ; their motions were so gentle and quiet, the birds themselves so handsome in shape and plumage, and the silence so delicious in contrast with those howling fiends in the grass, while above us, eating the seeds and hopping among the branches, were thrushes and finches, and now and then a carrion-gull would perch there too : how you would have enjoyed it !

Afterwards we walked back to the rocks where we had landed, a distance of several hundred yards through the

densest part of the rookery, and ever to be remembered by me as the most awful walk I ever had.

The grass grew six feet high, matted and tangled, while thousands and thousands of penguins swarmed between the tufted stems. If ever we stopped to see where we placed our feet, instantly we were attacked by a host of infuriated harpies. Very fortunately for me I had encased my legs in gaiters, but there was an exposed inch between them and my knickerbockers—a very tender part, you know, just there—and I got horribly tweaked and digged at. You can have no conception how infuriated and bold they are when protecting their nests, rushing at our legs in crowds, and following us pecking viciously. They were so thick that it was useless trying to avoid them, so one had just to tramp on as fast as possible, striking out forwards and sideways vigorously, every step knocking down, kicking, and treading on an india-rubbery substance, which if you dare to look down you will find is a penguin; or smash, smash, as you tread on eggs by the dozen; or—more dreadful still—squash, squash, as you tread on the small black creatures—horrible! horrible! But being a truthful narrator, I must chronicle these dreadful facts: add to all this the slippery dirty ground (it all reminded me of that line, "The slithy toves did gyre and gimble in the wabe"), the furies biting hard incessantly—reaching not only that inch of stocking aforesaid, but higher up, too, as I sunk into a hollow or hole,—the deafening brayings, the overpowering stench, the clouds of small black flies, which if one opened one's mouth one was bound to swallow *en masse*, the hard work fighting, rifle in hand, through the matted grass, the not being able to see where one was going, or when it would all end, till suddenly we were stopped by finding ourselves on the brink of a low cliff, and uncommonly nearly over it we were too, but oh, joy! we presently got to the open rocks again, and anything like the sense of relief! it was like escaping from the regions of the—you know!

This stretch of rock was covered with penguins, one stream coming from the grass and putting to sea, where they were jumping, splashing, and cleaning themselves in all directions, and the other stream landing and hopping into the rookery. Marvellous jumps they made in coming down to the rocks, doing a drop of three feet and more quite easily, bolt upright the whole time. They jump into the sea from off a ledge of rock feet foremost, and to see some hundreds go plump, plumping in together, is a truly delectable sight.

They landed very cleverly ; as the wave came washing up against the rock, they came with it under water, shooting out of the depths in shoals, clinging on to the rocks by their feet, and when the wave receded the face of the rock was plastered with them, and before the next wave came they had clambered up in some wonderful fashion, helping themselves with their bills, but not with their flappers. The speed with which they darted away under water can only be compared to a "flash of greased lightning."

By stopping the two streams we caused a great number to collect in one place on the bare rocks ; there must have been many more than a thousand packed close together and looking fixedly at us. Then, on being frightened, they all right-about-turned together, the massed ranks of white breasts and pink feet becoming suddenly a hopping crowd of slate-coloured things with a thousand pairs of yellow crests shaking above them. On the open rocks they are mild enough, and don't think of pecking one. The greatest wonder of all is how they find their own nests among the thousands of others as thickly strewn as they well can be, or rather how the husbands and wives mutually recognise each other, for one is always left in charge. The number of these penguins has been a subject of argument ; there must be at least several hundred thousand. Another small islet close by was also one dense rookery of penguins. As we stand here, penguins

are seen sitting on the tops of stones cropping up from the tall grass all up the hill-slope here and there. We found, while waiting for our boat, their white breasts admirable marks for our rifles, and many a penguin fell beneath them. We amused ourselves too, and less murderously, in throwing them down a cave, part of whose roof had fallen in, to watch their actions in the clear green water as they swam beneath it—darting fish-like out to sea.

We found some large caves near where we landed, with rock floors sloping into the sea. They, as well as an ancient sea-beach, running along the top of the low cliffs bounding the island, about thirty-five feet above the sea, are sufficient proofs of the late rising of the land. These caves the seals use in the breeding season. Noddies were swarming inside them, but they were not tame as at St. Paul's Rocks, in consequence of their having no nests.

Among the rocks were deep little pools, into which a heavier wave than usual came washing. Ideal aquariums these, their sides coated with seaweeds of wondrous colours, sea-anemones and urchins; and ugly little fish were swimming about with yellow tails and fins. One of these liked the taste of my cleaning-rod so much that he returned and bit at it several times.

The following notes about penguins on Inaccessible Island were collected by an officer from the Germans:—

The largest rookery of penguins is on the beach at the north side of the island, and there are smaller ones at other places. We have only seen this one species here. The males begin to arrive in small numbers in the last week of July, and afterwards in large numbers, all very fat. For a fortnight they arrived daily, and then there was an interval of two days in which no birds arrived. After landing, the birds at first lay about the shore and tussock grass, lazy and half asleep, and then they commenced preparing nests for their mates. The nests were made of the grass lying rotten on the ground, round in

shape, from two to five inches high, and about one foot in diameter. Nests are also made in holes in the ground scraped by the birds. After the interval of two days, on Aug. the 12th, the females come on shore and pair. Incessant fighting now goes on, and birds are seen hopping about blind. No bird ever goes into the water at this period, although an occasional one may be seen washing on the beach. A fortnight later they begin to lay their eggs, never more than three, and usually two. Both birds assist in keeping the eggs warm, although it is only the female who plucks feathers from her breast to make a hatching spot in which more perfectly to cover their eggs. The change of sitter is made with great care, the two birds being so close to each other that the egg is scarcely visible for a moment. Incubation takes place in about six weeks. In December both young and old leave for the sea, and almost all disappear for a fortnight. At the end of this time the old birds again land, and the moulting-season commences; the birds now spread themselves over much more ground, and some are seen in what would appear to be for them inaccessible places. They remain on shore till the middle of April, when all take their departure. This event, both years that we were here, happened in the night; in the evening the penguins were with us, next morning there were none to be seen except a few sick birds. After landing on the beach they remain some time on the stones cleaning and drying their feathers before going into the rookery. In bad weather with a heavy surf on, the landing is no easy matter for them. They watch for a heavy breaker and endeavour to land in it, avoiding the crest, and if taken off by the backwash, they dive the moment the next wave breaks, and are again carried on shore. When relieved from sitting on their nests they repair to the sea with great satisfaction, and are seen rolling and cleaning themselves on the surface. They are very fond of fresh water, scraping the drops from their feathers after rain, but they also drink salt water. When procuring food they

always work in parties, and single birds are never seen at this time, either landing or afloat. The males and females are the same size, but the former have stronger beaks. There is no difference in their cry, which is always the same note. The roads apparently left clear through rookeries for highways are really only water-runs; but there are main entrances into the rookeries, though on these the eggs are found, which is not the case in the water-runs. The penguins travel on the same roads to and from the water, though the rookery may extend a long way to right and left. The eggs are good to eat, but the birds are not. So much for penguins.

The following is the Germans' story, abridged from an account written by one of the officers:—

The idea of settling for a period on the Tristan d'Acunha group originated with one of the brothers, who had previously made an enforced stay on Tristan d'Acunha, consequent on the burning of his ship, from which—some 300 miles to the north-west of the island—the crew put off in boats and reached Tristan d'Acunha in safety. There they were treated kindly by the settlers, and heard that 1,700 seals had been captured in the season of '69, at one of the neighbouring islands. Telling this to a brother of his when he got home again, the two thought that it would be very nice to go out for a couple of years, kill any number of seals, and return with their skins to Fatherland, where they would sell them and make a lot of money. Well, away they start in a ship, whose captain however, before they arrive, gives them a less favourable account of the people on Tristan d'Acunha, among whom they purposed to abide for a time, than they like; so they decide to land on the neighbouring and uninhabited island called "Inaccessible," where wild goats and pigs were known to live. There they were landed in Nov. '71. Their stores consisted of a few pounds of sugar, coffee, flour, tea, &c.; a whale-boat; a rifle and gun with a little powder; a few bullets and some lead; cooking utensils, potato and other vegetable seeds,

bed gear, glazed windows, spars for roofing a house, &c. Also a dog and two pups. The west side of the island, on which they landed, consists of a beach some three miles in length, a bank of earth at one place, covered with tussock grass, lying between it and the foot of the cliff, which at the north end it was with great labour possible to scale; elsewhere it was perpendicular.

The younger brother at once started off shooting, climbing up the cliff by the aid of the tussock grass. He got nothing, and was too tired to return that night. The next day they built a hut, and shot a pig on the top of the island. Four days afterwards a party of sixteen men landed from Tristan d'Acunha on a seal hunt. They stayed nine days, treated the brothers kindly, advised them to shift their quarters to the north beach, showed them the path down the almost perpendicular cliff, helped them to build their hut, and brought their traps round in the boats. They then left, having only killed one seal, and promising to return at Christmas and bring over a cow, heifer, and young bull. The brothers then set to work building a hut, clearing patches of ground, and planting potatoes, &c. At the back of their hut it was possible to scale the cliff by the aid of the tussock grass; at the top a long valley was entered through which the water of the cascade ran. Only one kind of tree¹ grew on the island, growing in sheltered spots about twelve feet high, and in exposed positions creeping on the ground.

During December the weather was fine; they captured nineteen seals, which animals were landing in different spots and in considerable numbers; they also saw three sea-elephants. The sealing season terminated in the middle of Jan. '72; the whaleboat had been so damaged in knocking about seal-hunting and fishing as to be almost useless; there were no signs of the Tristan d'Acunha people; their provisions were running short, and being so much occupied with building, planting, and seal-hunting,

¹ *Phyllica arborea*.

they had not gone after the pigs and goats. In the beginning of April the tussock grass, which grew on the face of the cliff, and by aid of which only was it possible to get to the top of the cliff, accidentally caught fire and was destroyed. The means of reaching game being thus cut off, and winter approaching, it became imperative to begin laying in provisions. The whaleboat was, therefore, cut in two, the worst portion discarded, and a piece of wood nailed across the end of the best half, which made a boat capable of floating in fine weather. In this they visited their first landing-place, whence they got to the plateau above and shot two goats, which were salted down; they also shot a pig, whose fat they took with them, but had to leave the carcase behind, as being too heavy for their boat. When they arrived on the island they counted twenty-three goats. Of these, three had now been shot by the Tristan people, and six by themselves.

The number of wild pigs was great, the boars standing as high as a good-sized sheep. Their food, besides roots and grass, was furnished in endless quantity by the sea-birds and their eggs. The flesh of the goats was excellent, of the boars rank and uneatable, and of the sows wholesome but fishy. In the middle of May an English ship came in sight, whose attention the brothers attracted by a fire, but the surf prevented communication, much to their disappointment, though they would not have left the island if they could have obtained some provisions. The winter set in in the month of June, and was never very severe; a great deal of rain, heavy gales, but no frost on the sea-level. During one of the gales their boat was washed off the beach and broken up. In May a small crop of potatoes was dug, and during the following months a few other vegetables were fit for food. As they were unable to reach the plateau after the loss of their boat, the store of provisions was soon so reduced that it was necessary to diminish the daily allowance to a quantity just sufficient to keep them alive, and by the middle of August both men

were but little better than skeletons. In the summer a few fish had been caught from a rock, which it was possible to reach by wading at low tide. In winter the surf prevented this, and there were only three occasions on which they were able to fish. The only birds within reach were the "night-birds," a few thrushes and finches, and of these the thrushes only were eatable.

The male penguins began to arrive at the end of July; in the middle of August the females came on shore, and a fortnight later laid their eggs in the nests already prepared for them by their mates. The day previous to the penguins beginning to lay, the two men were without any supply of provisions whatever, and had that day eaten their last potato. In the first week of September a French ship hove to off the island, and her captain landed. In this ship they sent their nineteen seal-skins to Hamburg, and in exchange for penguins' eggs obtained sixty pounds of biscuit. Although the ship was bound for the East Indies, the brothers would not have hesitated to go in her had she come a fortnight sooner, but a fortnight's diet on penguins' eggs had so far restored their strength that they determined to remain another sealing season. During September and October they lived on penguins' eggs. On Oct. the 22nd a sealing schooner appeared and landed a party from Tristan d'Acunha, bringing, however, no cow or other promised supplies. The captain of the schooner gave the Germans some salt pork and biscuit, and made an arrangement to give them, for a certain number of seal-skins, a passage to the Cape on his return in a few weeks' time. During the next twenty days the brothers caught six seals, but the schooner never returned.

On Nov. the 10th the salt pork and biscuit was all eaten, and it became necessary to seek some source of subsistence. So on a fine day they swam round a point on the left of their hut in search of food, taking their blankets, rifle, and a spare suit of clothes inside a barrel which they towed. Stopping that night at the foot of the cliff, the brothers, the next day, with great difficulty climbed the cliff, and

went again to their first landing-place, shooting a pig on the way. They lived till Dec. the 10th on the flesh of seven goats which they shot. An American whaling schooner, which had sent her boats in to fish, gave them a few pounds of flour and molasses in exchange for their six seal-skins. Expecting the return of the sealing schooner, the brothers determined not to quit the island in this vessel. They returned to the north beach on Dec. the 10th, and a few days afterwards were startled by firing and shouting. This proceeded from a party from Tristan d'Acunha, which had landed on the west beach the day after the Germans had left it; and who, returning from a seal hunt wherein they had got forty-two seals and one sea-elephant, were now shooting down the goats, bagging eight of the remaining twelve. They assured the Germans that the sealing schooner would call at Tristan the following month, and from there would proceed to Inaccessible Island, and so again the brothers decided to remain. The sealing schooner never arrived, though she was seen at Tristan d'Acunha in Jan. '73. On the 22nd the eldest brother again swam round the point, mounted the cliff and shot four pigs. From these two buckets full of fat were made, and the hams were thrown over the cliff (about 900 feet) to the other brother on the beach below. On the 31st the brothers rejoined on the beach. The following day a boat from Tristan landed on the west side, and shot the remaining four goats. The reason for this is difficult to explain, there being an abundance of sheep, pigs, and cattle at Tristan. The brothers considered it an endeavour to drive them from their quarters, especially as after a detention from bad weather the party left without holding any communication with the Germans,—indeed they seemed to avoid discovery. From this time until we rescued them on Oct. the 16th following, the men were left alone to repent at their leisure of coming to Inaccessible Island.

During February the Germans remained at their hut,

potatoes and vegetables mixed with pigs' fat forming their food. Next month the potatoes and fat were exhausted, so both swam round the point and climbed on to the plateau. They shot several pigs, and caught young petrels in their holes. After remaining a fortnight on the west beach, they decided to separate for the winter, the eldest brother living on the top of the island to kill pigs, while the youngest would live at their hut on the north beach look after the garden, melt down the pigs' fat thrown down to him by his brother, and take care of three young pigs which they had run down; these pigs, secured to a cask, were towed round the point, and, though nearly drowned, arrived safely. The eldest brother remained on the top of the island till the end of April, when he rejoined his brother, and both lived on young petrels and potatoes. He had caught another young pig, but it was drowned while being towed round the point, the man himself reaching the beach in an exhausted state, much bruised and cut. Potatoes and petrels failing by the first week of June, the eldest brother again left to live on the top of the island, where he remained till the middle of August, shooting pigs and throwing the fat down as before. Pigs' flesh was now their only food. The two brothers could see each other in fine weather, and, unless prevented by a high surf or wind, could hold a sort of conversation. On one occasion a large iron ship filled with people was observed to pass within a mile of the island during the first lull after a heavy gale with thick weather. When seen the crew were actively employed in making sail to clear the island. As soon as the penguins began to lay, the two men were busily employed in collecting the eggs, on which they were living when the *Challenger* found them. The dogs which they had brought with them broke loose, and ran riot among the penguins, becoming quite wild and savage, and so were all shot. The pigs were sold to our crew, and not much cared about.

The ship dredged between the islands, and got some

corals and echini; and the next day again, in 1,000 fms., getting more of the same; the forms being remarkably like what are found off the coast of Portugal. Between Bahia and the Cape we dredged or trawled eight times.

We arrived at the Cape of Good Hope (anchoring at Simon's Bay) on Oct. the 28th. The eldest brother got a good situation as clerk in a business house at Cape Town, and the youngest brother went home.

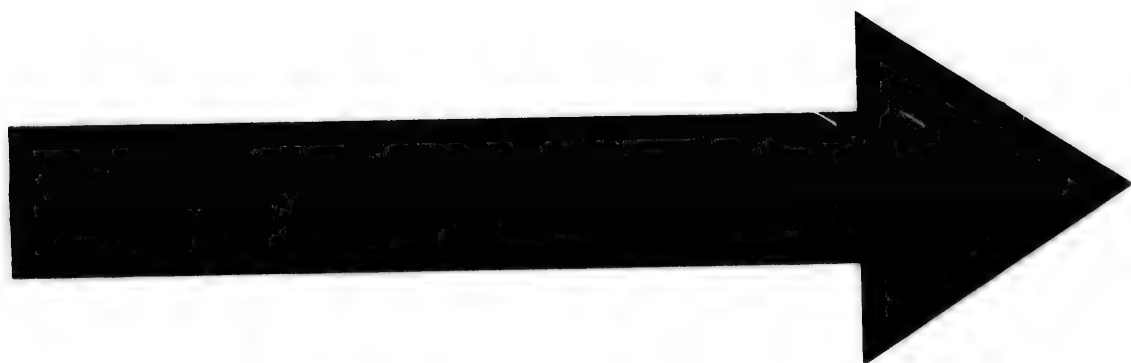
Over the whole of the N. Atlantic we found the temp. of the bottom water to be 35° in the western portion, and $35\cdot3^{\circ}$ in the eastern; but no sooner had we, by a few miles, crossed the Equator into the S. Atlantic, than the temperature fell suddenly to $32\cdot4^{\circ}$, and up to our arrival at the Cape it did not again rise above 33° . An explanation of this will be seen in the last chapter.

Depth in fathoms.	N. ATLANTIC.		S. ATLANTIC.	
	Max.	Min.	Max.	Min.
Surface	84	45	82·7	46·7
50	74	45	71·5	40·0
100	72·4	45·1	65·3	36·5
150	64·7	43·0	61·2	35·2
200	64·0	41·1	57·1	35·0
300	63·0	39·2	49·0	35·0
400	58·2	38·3	42·3	35·0
500	53·8	38·0	40·5	35·0
600	48·4	37·6	39·9	35·0
700	46·3	37·4	39·6	35·0
800	42·5	36·4	39·4	35·0
900	40·7	37·0	39·2	35·0
1000	39·3	36·8	38·9	35·0
1100	39·1	36·6	38·5	35·0
1200	38·4	36·4	38·2	35·0
1300	37·8	36·2	38·0	34·8
1400	37·3	35·7	37·6	34·5
1500	37·0	35·5	37·3	34·2

"The Dragon-tree of Orotava (page 7) is visited by all travellers in the Canary Islands. Its trunk below the lowest branches is 80 ft. in height; and ten men holding hands can scarcely encircle it. When Teneriffe was discovered, in 1402, tradition affirms that it was already as large as it is now, a tradition confirmed by the slow growth of the young Dragon-tree of the Canaries, of which the age is exactly known; whence it has been calculated that the dragon-tree of Orotava is the oldest plant now existing in the globe—with an antiquity which must be at least greater than that of the Pyramids. The trunk of this tree was hollow, and

might be ascended by a staircase in the interior up to the height at which it began to branch. Near the ground Le Duc found it to be 79 ft. in circumference. Unfortunately it was totally destroyed in a hurricane which occurred in 1867. Merely a few examples of the Dragon-tree live in Madeira and the Canary Islands: these remarkable trees are therefore approaching extinction. This tree derives its common name from a resinous exudation known in commerce as dragon's blood. The resin has been found in the sepulchral caves of the Guarches, and has hence been supposed to have been used by them in embalming their dead" (p. 14).

Of the Baobab-tree (page 35) in Africa Dr. Livingstone says: "About two miles beyond the northern bank of the Pan, we unyoked under a fine specimen of the Baobab, here called *Mowana*; it consisted of six branches united into one trunk. At 3 ft. from the ground it was 85 ft. in circumference. These *Mowana*-trees are the most wonderful examples of vitality in the country; it was therefore with surprise that we came upon a dead one, a few miles beyond this spot. It was the same as those which Adanson and others believed, from specimens seen in W. Africa, to have been alive before the flood. I would back a true *Mowana* against a dozen floods, provided you did not boil it in sea-water, but I cannot believe that any of those now alive had a chance of being subjected to the experiment of even the Noachian flood. The natives make a strong cord from the fibres contained in the pounded bark. The whole of the trunk, as high as they can reach, is often quite denuded of its covering, which in the case of almost any other tree would cause its death; but this has no effect on the *Mowana* except to make it throw out a new bark, which is done in the way of granulation. No external injury, not even a fire, can destroy this tree from without; nor can any injury be done from within, as it is quite common to find it hollow; and I have seen one in which twenty or thirty men could lie down and sleep as in a hut. Nor does cutting down exterminate it, for I saw instances in which it continued to grow in length after it was lying on the ground. Those trees called exogenous grow by means of successive layers on the outside. The inside may be dead, or even removed altogether, without affecting the life of the tree. The other class is called endogenous, and increases by layers applied to the inside; and when the hollow there is full, the growth is stopped—the tree must die. Any injury is felt most severely by the first class on the bark—by the second on the inside; while the inside of the exogenous may be removed, and the outside of the endogenous, without stopping the growth in the least. The *Mowana* possesses the power of both. The reason is that each of the laminæ possesses its own independent vitality; in fact, the Baobab is rather a gigantic bulb run up to seed, than a tree. Each of 84 concentric rings had, in the case mentioned, grown an inch after the tree had been blown over. The roots, which may often be observed extending along the surface of the ground forty or fifty yards from the trunk, also retain their vitality after the tree is laid low." Mr. J. Monteiro, in his "Angola and River Congo," tells us that "the Baobab rears its vast trunk 30 to 40 ft. high, with a diameter of 3 or 4 ft. in the baby plants, to usually 20 to 30 ft. in the older trees. Trees of more than 30 ft. in diameter are rare, but they have been measured of as great a size as over 100 ft. in circumference; the thickest trunk I have ever seen was 64 ft. in circumference, and was clean and unbroken, without a crack on its smooth bark. The leaves and flowers are produced during the rainy season, and are succeeded by the long pendant gourd-like fruit, like hanging notes of admiration, giving the gigantic leafless tree a most singular appearance. Millions of these trees cover the whole of Angola, as they do indeed the whole of tropical Africa. . . . The leaves when young are good to eat, boiled as a vegetable, and in appearance are some-



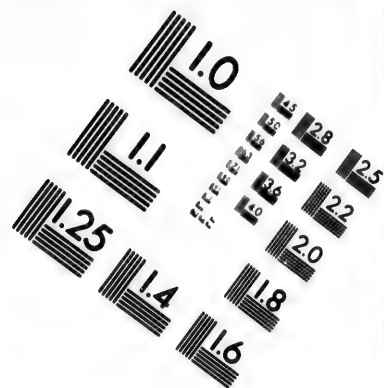
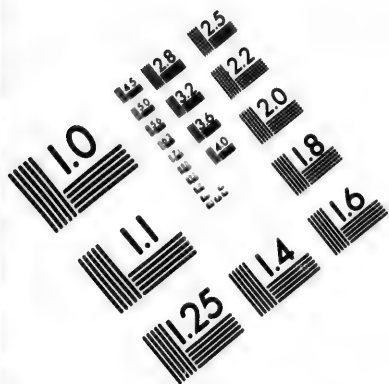
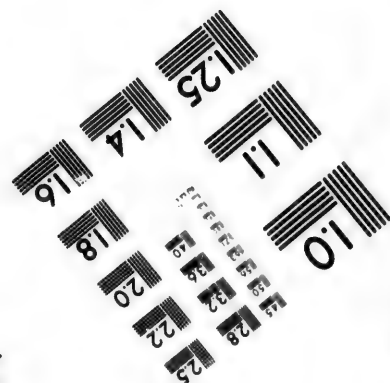
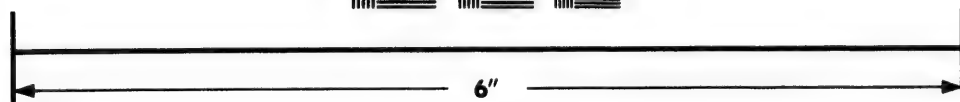
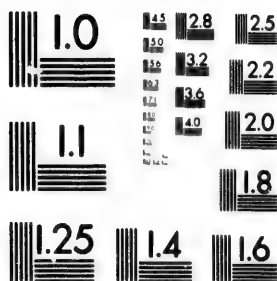


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what like a new horse-chestnut leaf about half grown, and of a bright green; the flowers are very handsome, being a large ball of pure white, about 4 or 5 inches across, exactly like a powder-puff, with a crown of large thick white petals turned back on top of it. . . . The centre of these vast trunks easily rots, and becomes hollow from the top, where the stem generally branches off laterally into two or three huge arms. This is taken advantage of by the blacks, to use them as tanks to store rain-water in against the dry season. The finest orchilla weed is found growing on the Baobab-trees near the coast, and the natives ascend the great trunks by driving pegs into them one above the other, and using them as steps to get to the branches. These trees are the great resort of the several species of doves so abundant in Angola, and their favourite resting-place on account of the many nooks and spaces on the monstrous trunks and branches in which they can conveniently build their flat nests and rear their young. There is something peculiarly grand in the near appearance of these trees, and it is impossible to describe the sensation caused by these huge vegetable towers, that have braved in solitary grandeur the hot sun and storms of centuries. . . ."

The inner bark, which for a variety of uses (among others, for the women's scanty dresses) has always been employed by the natives, has lately been discovered by Mr. Monteiro to be a valuable material for paper making, who has "established its success in this matter beyond any doubt," thus opening a new and large field for native industry.

Yet another use of the Baobab: "Within these hollow trees, the negroes suspend the dead bodies of those who are refused the honour of burial. There they become mummies, perfectly dry and well preserved, without any further preparation or embalment."

Of the very similar Australian species, which, too, characterises tracts of land in that country, I elsewhere find the following: "The leaves, and also the bark and sap-wood of the trunk, yield a large quantity of mucilage, which in Africa is used by the natives mixed with water, as a cooling drink, and also in their food. The wood is peculiarly soft, spongy, and elastic, does not yield very readily to the axe, and is useless for timber or fuel. Men of the expedition who had symptoms of scurvy, boiled the interior substance of the fruit, and found it to be of material assistance to their rapid recovery." Baobab-trees are known in Australia which measure 85 ft. in circumference at 2 ft. from the ground.

What do you think one of our men did at Bermuda! He had occasion to cut down a large branch of a tree; so up he climbs, sits himself comfortably on the branch, and proceeds to saw away vigorously at that portion of it between him and the trunk! And presently, with the branch, down he came, seriously injuring himself. One has heard a similar story of a negro, who did the same thing, and getting up—not much injured—from his fall, glared fiercely round, shouting, "Who did dat? Who did dat?"

St. Paul's Rocks (page 41) have been a puzzle to geologists, as they have been ascribed to a non-volcanic origin, and therefore are exceptions to the almost universal law that oceanic islands are either volcanic or coral. Mr. Murray, on examining sections of rock specimens from St. Paul's, finds that they are erupted or volcanic rocks, though, through the action of the sea, they have been decomposed and converted partly into serpentine. Layers of peroxide of manganese have been detected, and this has apparently the same source as the manganese in the sea-bed, viz., from the augite, olivine, and other minerals in the rocks.

CHAPTER II.

THE CAPE TO AUSTRALIA.

Dec. 17, 1873.—Left Simon's Bay early on a lovely calm morning. Steamed to the southward for 30 miles, and then dredged in 98 fms. on the Agulhas Bank. Four hauls on greenish sand brought up great numbers of echini—identical with specimens which have been dredged up in the Sound of Mull; starfish—some new, others known northern forms; annelids, soldier-crabs, actiniæ, and small shells, but no large shells, for which the Cape is a famous place. We then went on with a light northerly breeze.

Dec. 18.—Dredged early this morning in 150 fms., and got a wonderful haul, much the same as yesterday, with the addition of corals and fine sponges. The starfish and echini were again almost all well-known northern species.

Dec. 19.—Dredged in 1,900 fms. on pure globigerina ground, getting a large holothurian, a small zoophyte, and a couple of handfuls of small black stones. To-day we are in a warm westerly current, running one knot an hour; both water and air 5° warmer than yesterday. Two flying-fish were seen, whose presence in this high latitude is accounted for by the warm current, its temperature being about 73°. It is curious that since leaving the Cape we have seen no birds till this evening, when an albatross appeared.

Dec. 20.—We got the westerly winds last night, and ever since we have been bowling along ten knots, with a heavy swell rolling us madly about. A few flying-fish,

albatross, stormy petrels, and porpoises after us to-day. Marion Island 928 miles distant.

Dec. 21.—A disagreeable day, squalls, rain, blowing fresh, and a heavy swell behind us; ship rolling occasionally 30° each way, air becoming decidedly chillier, chairs dashing headlong about, breaking their own and everybody else's legs, and people generally blessing their path of life. We ran out of the warm current last night, the temperature of the sea falling 11° in four hours, from 71° to 60° . Numbers of birds following us,—a few albatross, a cloud of small grey terns, and stormy petrels. We have been making merry, as far as the bad weather and good hot grog will allow us, in honour of our first "at sea" anniversary. Wind shifted eight points this evening, thermometer and barometer falling; and weather looking dirty; but the general discomfort much mitigated by the pleasant fact of our having averaged ten knots an hour during the last twenty-four.

Dec. 22.—Rolling and lurching along nine and eleven knots all day, a half gale of wind and a heavy sea on our beam. Ship heeling steadily over, not rolling much, but lurching to leeward to the tune of 37° or so. Another good run of 240 miles, not bad work for such a heavily-laden craft as we are at present, being, with extra coal and provisions, a foot deeper in the water than we have ever been before. Have you ever seen an egg blow up? I cracked one this morning; a startling report followed; the egg vanished into space followed by my disgusted messmates. No more eggs this cruise, I think!

Dec. 23.—A beautiful day, sharp cold wind, thermometer 41° . A bitter shower of sleet, followed by hail early this morning. Stoves lighted to-day for the first time, and mighty pleasant they are too. Wind and sea much gone down this evening. Run 206 miles.

Dec. 24.—Took advantage of a beautiful day with little wind or sea to sound—an impossibility in the heavy swell we have been in lately. Great numbers of albatross flying

about—the “gigantic,” “sooty,” and “Cape-hen;” also grey terns and stormy petrels. Two of us tried for some time to catch an albatross; an operation which consists in veering astern a good-sized hook and lump of meat while the ship is stationary, as she is when sounding. The difficulty with a long length of line is to haul it taut at the proper moment, so as to make the hook catch in the curve of the upper mandible, for if the birds are allowed to swallow the bait and hook they will cut the line easily with their sharp bills. It is very good fun, and exciting, particularly when several birds are all fighting for the bait at the same time; however, to-day we failed to catch them. A penguin came up close alongside as we were sounding, bobbed about for a minute, and then disappeared. Marion Island—the nearest land—120 miles off. Showers of semi-sleet this evening, and a northerly breeze.

Dec. 25.—A shift of wind last night, which prevents us from getting to the island, which was sighted at mid-day. Cold, gloomy-looking land, with snow reaching pretty low down. Saw more penguins. A Christmas dinner, singing and grog-drinking afterwards—our second Christmas at sea. To-night we are lying off the islands, the temperature $38^{\circ}5$ and oh! the pleasure of keeping watch on wet decks, with sharp hail and sleet pelting one's face and freezing one's toes.

Dec. 26.—A beautiful sunny morning. Steamed close up to leeward of Marion Island. A rock-bound shore edging a long green slope rising gradually up to about 3,000 feet; the mountain peaks hid in white clouds and mist, and snow lying to about half-way down; numbers of small crater cones cropping up here and there from shore to summit, some of the most vivid red colour; rounded streams of grass-covered lava, broken off in places in high, black precipices; shadows of clouds flitting over the sunlit mottled green slopes of the lower land; sunshine lighting up the snow on the higher peaks, and the patches lying on the black rocks in the middle distance.

With the naked eye we could see large white objects all over the lower land, which in a civilized country might have been very white sheep, but here, with our glasses, we could see they were albatross sitting on their nests, while numbers were flying round us and settling on the water, where, too, flocks of penguins and shags were swimming and diving.

After sending a boat in to discover whether landing was practicable, we landed on the rocks in a small cove, which with care was tolerably easy, the day being particularly fine and calm, and an outlying belt of kelp smoothing the water; but if it had been a rough day we should not have been able to land here at all. A "sheathbill" came at once hopping along the rocks to meet us in the most confiding manner, and was killed for its pains; they are very pretty birds, like white pigeons, but have longer legs, and a sheath over the rear part of the upper mandible. A scramble over very slippery rocks brought us to a small rookery of penguins—of a species new to us—and a little further was a female sea-elephant, which, as we came up, raised her head, opened her mouth, and goggled at us with big black eyes. In the first excitement, and with the idea that she was a fur-seal, she was quickly killed by blows with a stone on the nose. Her fur was in a very mangy condition, most probably she was casting it; her length was about seven and a-half feet. We all separated and walked in several directions, over spongy, boggy land, covered with long coarse grass, patches of hard moss, lava boulders scattered about, and at every step a probability of sinking up to the knees and higher in the coldest, wettest of bogs.

Spotted thickly over the lower land were the albatross sitting on their high nests, standing defiantly up as we approached, and clattering their great pink bills in rather an alarming way. They are truly magnificent birds, their plumage varying considerably according to age, the oldest birds being pure white, with the exception of the wings,

which always retain a few black feathers, while the younger ones have entirely black wings, and their general plumage is tinted brown. There were comparatively few eggs, it being rather early in the season as yet, but what there were, were just in the right state for blowing. They never have more than one egg, which is white, tinted reddish at the larger end.

We measured several birds of twelve and thirteen feet across the wings, and I suppose there were none larger than thirteen and a-half feet across. The process of measuring the albatross when alive and on the ground is as follows:—two of us approach, one on each side, and badger them till they spread their wings, which we then seize and extend, and as their bills, which beware! for they can give a heavy blow, are six feet or more away from both of us, we can quietly proceed to measure. Thus is the huge albatross completely circumvented! Many albatross being wanted as specimens, we found that a blow with a stick across their throats killed them at once. Does not it seem a shame to kill these glorious birds for the sake of their wing-bones and feet? Of the first pipe-stems are made, and of the second tobacco-pouches, and pipe-smokers say that nothing makes a better stem than these long pinion bones of the albatross's wings.

Although a much grander bird, these "Cape-sheep" are not nearly so pretty as the "mollymawk," which I described to you from Nightingale Island, and of which, by the way, we have seen none since leaving those islands. The nests of these albatross here are built in the same fashion, but are proportionally larger.

On the ground they are the clumsiest of birds, and in consequence of having hardly any tail—a great symmetrical defect in their figures—they are excessively top-heavy. They appear to dread the act of alighting much, flying round and round their nests close to the ground before they make up their minds, and when they finally do, often toppling forward on their beaks. One fellow we

saw go completely head over heels. We weighed one on board, $19\frac{1}{2}$ pounds, which seems very little judging from their size, but the feathers are immensely thick.

They cannot rise straight up from their nests and fly away, but have to scrape along the ground, paddling with their feet, for a considerable distance, before they get impetus enough to rise in the air, and continue their marvellous flight. This they have to do also when rising from the sea, the distance of combined paddling with their feet and flapping with their wings, varying with the force of the wind.

There were only small rookeries of penguins along the shore, peopled by three different species—the king penguin, our old sulphur-crested friend of Nightingale Island, and another—all herding together and sitting on nests. But in the course of our rambles we came across a small freshwater tarn, and round this, covering more than an acre of ground, was a large rookery of king penguins. This is the only rookery of king penguins that we came across in the southern islands, and it was really a wonderful sight. The tarn was about half-a-mile from the shore, a stream running into it from the snow above, and out again into the sea. Eggs and young birds lay thickly scattered all over the rookery, the eggs being laid (one or two only to each bird) on the bare rock—a dry place, though, one would think, rather hard; the young ones, some of which were very big, being covered with a soft thick down. We noticed the odd fact that these youngsters whistled, regularly piped a couple of notes, which the old birds do not do. When disturbed they stand with an egg between their thick black legs, holding on to it bravely even when knocked about for several yards.

Numbers of "sheathbills" were hopping about in the rookery, and one was seen stealing an egg from an enraged old penguin, shoving it along with its beak just clear of the maternal anger, all the time pecking away till the egg broke, and then it rapidly devoured the contents. I

am afraid they are regular scavengers, though, these pretty sheathbills, appearing by no means cleanly, or particular in what they eat; but they cruise about on the shores as well, where there are no penguins. The sealers (whom we afterwards met) told us that this egg-poaching was a regular habit of these birds, and that they are often seen almost carrying an egg on the top of their bills.

The grey terns that I have mentioned as following us at sea, turn out to be "prions," which burrow in the ground. Their holes are everywhere here, and though nobody saw them go in or out, there can be no doubt that these holes are their breeding places. Walking along we frequently heard squealing—as of rats—under foot, but the holes were too deep to follow up by manual digging, and we had brought no spades. This squealing we suppose to proceed from them; one was shot, and found to be of the same species as a prion which I caught at sea the other day, and different from those we caught afterwards. The hawk-gulls are nesting here too. Brutes! we had to ward them off with our sticks, for if you chance to pass close by their nests, they fly at you open-mouthed, and sweep screaming past, just clear of your head, and altogether one feels inclined to avoid their nests. Sooty albatross were flying about, but we saw none sitting; if they were at all, it was perhaps higher up than any of us reached. As we drove a mob of penguins in front of us, the foremost ranks came to a small precipice—a higher drop than they liked. They stopped, faced round, roared at and expostulated with the rear ranks, which kept pressing on, viciously pecking those ahead, and over they all went pell-mell, with, however, harmless results.

No man-of-war people have ever landed on this island before. Its position we found to be 30 miles out in longitude as marked on the chart. It is supposed to be about 45 miles in circuit. 15 miles to the north is Prince Edward's Island, where the sealers go and anchor in a

small bay, but to Marion Island, we heard at the Cape, they never come.

In the meantime the ship was dredging in from 30 to 100 fms., getting very rich hauls. A stupid old albatross flew slap into the rigging, and fell back into the water stunned.

Dec. 27.—Knocking about between the islands last night, and dredging all day. We have given up going to Prince Edward's Island on account of the weather being misty. The look of the islands is much the same—cratery hillocks, high black precipices, and dark mottled green colouring. Albatross were nesting there also. A fine haul of *alcyonaria*—or more prosaically sea-shrubs—from 300 fms., pink, yellow and green branches covered with the most delicate flower-like animals.

Dec. 29.—Delightful weather since leaving the islands. An almost calm sea, a nice breeze from the northward, air tolerably warm, ship sailing along so quietly that, though going nine knots, we could fancy ourselves in harbour. Trawled in 1,375 fms. on white globigerina ground, and got a marvellous haul, the richest—science says—we have ever got. But I can't tell you what came up, everything did! Nineteen fish—some of them new species; fine sponges—among them a Venus' basket; starfish *ad libitum*—among them four new ones; an enormous spider-crab, with a body about the size of a shilling, and legs some nine inches in length; a great many crinoids; a huge cuttle-fish, &c. Suffice it to state that about a hundred different species came up—many of them quite new, more very rare. It is the first time we have got a haul of crinoids; occasionally, only, we have got a small and isolated specimen, while these are a foot high, a great many being in a perfect condition, while the trawl was full of broken ones. "Wh-a-a-a! Wh-a-a-a!" was suddenly heard to-day, and lo! a flock of penguins, 206 miles from the Crozets—the nearest land.

Dec. 30.—Another trawling in 1,600 fms. More animals even than yesterday. This southern part of the world

would appear to be the nursery of almost all submarine creatures. Among other things were fish, a fine *umbellularia*, crinoids and corals. We have been fishing for sooty albatross, which were ravenous and easily caught.

1874. *Jan.* 1.—Sighted the Crozets¹ the night before last—Hog Island, so called from the number of hogs inhabiting it, and said to be very ferocious, and unpalatable from their feeding on dead penguins. We lay off during the night, and in the morning found ourselves in a thick wet fog, which cleared off slightly in the afternoon and enabled us again to make for the island. We saw the surf breaking on a black beach when two or three miles off, while all the rest of the land was shrouded in thick mist, which again came down upon us, and again we had to stand off.

Jan. 2.—Same weather to-day; tremendous rain and very thick mist, but a smooth sea. Sighted two other islands of the group last night, during which we hove to. Great numbers of penguins and other birds; the penguins “wha-a a-ing” loudly all round, a startling sound when uttered close alongside on a still night.

Jan. 3.—The weather clearing a little we made sail for Possession Island, 50 miles distant, and at noon caught a glimpse of its mountain tops—bold purple crags, almost clear of snow, although 5,000 feet in height—appearing above white clouds. At 7 P.M. we were in the channel separating Possession and East Islands. A lovely evening—blue sky, golden-tinted towards the horizon, and the sun shining brilliantly over the heavy bank of yellow fog out of which we had sailed. On our right, East Island—a rugged heap of peaks and tremendous precipices—rose, purple-coloured, above the bank of yellow fog which hid the lower land. On our left, half a mile distant, lay Possession Island, dark green slopes and black terraces rising successively up till faint and lost in mist and cloud;

¹ A group of islands since memorable as the scene of the *Strathmore* shipwreck. There is no seal fishery carried on at the Crozets now; and Hog Island has been cleared of pigs, being overrun with rabbits instead.

a heavy surf and spray dashing along the iron-bound coast. A cloud of birds were flying over our wake, chiefly Cape-pigeons and albatross, which last were nesting on this lee side of the island.

As we steamed along we opened a small bay—Navire Bay—where we saw a hut, a boat, and some casks. We fired a gun to attract the attention of any possible inhabitants, but there was no sign of life. By this time it was getting dusk, and as the bay in which we wished to anchor—America Bay—was still a few miles off and right in the teeth of a stiff breeze, we bore up for the night, making sure of the morrow. It was well we did not go on and try to anchor, for that night it blew a short but heavy gale, followed by the everlasting fog, so we gave up all idea of landing on these abominable Crozets, and made sail for Kerguelen's Land, running before a strong westerly wind and heavy swell the whole way. No very bad weather, but disagreeable rain and mists and squalls and a shower or two of snow. We ran the distance—550 miles—in three days, and sighted "Bligh's Cap," 20 miles to the northward of Christmas Harbour—on the evening of the 6th.

Jan. 7 (Christmas Harbour).—Got in here at nine o'clock this morning—the "land of desolation," as old Cook called it, and as it is still called by the sealers. Kerguelen's Island is a gloomy-looking land certainly, with its high, black, fringing cliffs, patches of snow on the higher reaches of the dark-coloured mountains, and a grey sea, fretted with white horses, surrounding it. To right and left of the harbour's entrance are perpendicular, table-topped, lava cliffs, covered on the top with green moss. On the left an oblong-shaped block of cliff is separated by a deep cut from the neighbouring cliff, of which it once formed a part; in this detached bit is a colossal arch, 150 feet in height, and 100 feet across at the base—a grand freak of nature. The harbour narrows to 500 yards some distance from its head, towards which it

gradually tapers, ending in a sandy beach. As we lie at anchor, on our left, towering 1,000 feet above us, is an enormous rounded mass of black basalt, which has burst through rock of older formation and there remained. On our right is a steep slope, covered with moss and grass, traversed occasionally by horizontal bands of trap-rock, and capped by a peak of grey rock—an old crater—1,300 feet high. Ahead, rising from the beach, the mossy slope continues, while beyond, and right and left, are bare brown hills.

Thousands and thousands of penguins are sitting along the southern shore—all of the crested kind—the sulphur-crested, and another, a new one to us, with a golden crest extending across the head. These are nesting among the clumps of moss growing on the steep banks above the black rock-shores; and the water all round is alive with them, jumping and splashing everywhere. Black-backed gulls—the same as the northern one—are here in great numbers; also “stinkers”—great, hideous, brown petrels, with large beaks and dirty white heads; hawk-gulls, too, and Cape-pigeons.

We landed on the beach, where stood groups of king penguins, as also that smaller species which we first met at Marion Island, and which here had a rookery of their own, with numerous progeny, on the slope above the beach. Besides these there were young and old hawk-gulls, and, fishing along the edge of the water and kelp, screaming shrilly, flocks of little black-capped terns. Above the sand, lying on the grass beside a small stream, were three large sea-elephants—all females. These goggled at us with their large black eyes—most melting eyes—opened their mouths, tried to speak, but only gurgled harshly, looked very much bored, then rather angry, and then flapped off, with undulating clumsiness, into the small stream, up which they went instead of making for the sea. The end of these poor creatures was that they were all killed, science wanting their skeletons and muscles; so

in the evening a boat was sent, with butcher, naturalists, knives, and murder, making a feast for gulls and stinkers.

A little further on, also lying in the long grass, we came to a dark-coloured, long-haired beast. "By Jove, a fur seal!" and rush at him, but rush back quicker as he started up, showing an ugly mouthful of teeth, and looking as fierce as a tiger. We dared not go close to him, for when we tried he gave spasmodic leaps towards us, "ughing" disagreeably—very! A charge of shot in his head made him more approachable, and repeated blows with a geological hammer still more so; but it required another shot in his head before he was dead, and then he was skinned with all speed. They are dangerous animals to approach. The sealers tell us that they go at them always two together; killing or making them senseless, with blows on the head from long lead-weighted sticks. As in the North, so here in the South, these seals are skinned when—in ninety-nine cases out of a hundred—really alive, though senseless, and the difficulty we had in *killing* this seal proved to me the truth of this unpleasant story.

A flock of ducks flew up from the grass at the discharge of our guns, and three brace were brought down, which satisfied any doubts as to whether we should get duck at Kerguelen's. We had heard from a man at Tristan d'Acunha who had been here in a sealer, that they were very plentiful, and Ross also mentions them. We found them plentiful everywhere and absurdly tame, though it took heavy shot to kill them. They feed upon the seeds of cabbage—the famous Kerguelen cabbage—made so firstly by Cook, and secondly by Hooker. But listen. "The contemplation of a vegetable so eminently fitted for the food of man, and yet inhabiting one of the most desolate and inhospitable spots on the surface of the globe, must equally fill the scientific inquirer and common observer with wonder. . . . The 'Pringlea,' in short, seems to have led an uninterrupted and tranquil life for ages; but however loth we may be to concede to one

vegetable an antiquity greater than another will force one of the two following conclusions upon the mind:—either that it was created after the extinction of the now buried and for ever lost vegetation over whose remains it abounds, or that it spread over the island from another and neighbouring region, where it was undisturbed during the devastation of this, but of whose existence no indication remains." This cabbage grows in great quantities. We found it also at Marion Island. I cannot say I thought it good, and in the ward-room, though some of us thought they liked it at first, it was soon left out of the bill-of-fare; but the men appreciated it, and always had lots for dinner.

The walking was not pleasant, the ground being very boggy, though here and there one came to a stretch of hard moss. A great many ducks were shot; and so tame were they that we had considerable difficulty to get them to rise, for though, as we were shooting for the "pot," we should not have scrupled to shoot them where and whenever we saw them, still somehow they were much easier to kill on the wing than on the ground, and everybody came back with stories of how they had fired half a dozen shots at a duck sitting and never hit it. They are seen sitting about twenty yards ahead, or starting out from under a mound of moss and running away.

About two miles from the head of the harbour, across the hill range, we came, passing a large lake on the way, to the coast on the other side of the island—a horseshoe bay, encircled by high, perpendicular cliffs, and, lying down, we looked over on the sea dashing up, and penguins on the rocks below in thousands. A splendid sight! In a cave, and scattered about below the large block of basalt, we found a quantity of fossil wood—the same as Ross mentions—relics of once luxuriant vegetation.

We have been very fortunate in the day, plenty of sun, quite hot walking on shore, and the place looking almost cheerful with the sunlight lighting up the vivid green of

the moss—all the more brilliant by contrast with the dark terraces of basalt.

The ducks are excellent—a most welcome change in our diet—and we hope while in "Desolation" to live on them.

The next morning early we weighed under sail—making a long "stern-board," for the bay is too narrow to permit of our turning at once—to run down the coast to the southward, the chief object of our coming to Kerguelen's being to find a good "observation station" for the Transit of Venus people, who come this year. Christmas Harbour would not do, too much cloud hanging about the surrounding hills, and not sufficient horizon visible. A run of 60 miles with a fair wind, passing between many small islands, with the mainland—all gloom and mist, black headlands and mountains, large patches of snow lying high up, deep bays and desolation generally—lying on our right, brought us in the evening to "Betsy Cove," where we anchored in a snug little bay, full of kelp, bordered by black rocks, surrounded by low hilly land covered with moss and grass, and a strip of sand at its head strewn with huge bones of whales. Near by—type of the land!—are seven graves with white painted head-boards, their rude inscriptions telling us that those buried beneath were all American whalers, most of them "killed while fast to a whale."

We remained at Betsy Cove from the 9th to the 16th, the surveyors surveying the bay and coast around; the shooters shooting duck every day; beautiful weather nearly the whole time, and so warm, that on many occasions we actually basked in the sun, lying on the soft moss—all this being a most agreeable disappointment, as we expected cold, wet weather. A great blessing, too, that in this cove there were no penguins, excepting an occasional one or two landing on the sandy beach. There were, however, large rookeries of the crested kind not far off, across a neck of land among deep, narrow coves; and small herds of king penguins, and of another species, were always to be found at other places along the shore, not far from the

ship. The rocky shores of our little bay were much frequented by shags and sheathbills, the latter hopping actively about, enlivening the blackness of the rocks with their snow-white plumage. I brought a number of them alive on board, hoping to keep and tame them—a vain hope, for one by one they all disappeared, eaten, I believe, by the omnivorous blue-jacket.

The day after our arrival, we, walking along the sea, came to a long stony beach about two miles from the ship, lying on which were four sea-elephants and a sea-leopard. One of these sea-elephants was a male, an enormous fellow, and cuddled up alongside of him were his three wives—a fine old bashaw with his harem! The old fellow was dull and stupid at first, and then he tried to look fierce, grunting and blowing out his nose, till from a blunt one it became a long proboscis. He looked as large as an elephant with its legs “unshipped.” To show you how excited people get, and how large he *looked*, one of us sent a message on board, asking for a *large* boat to go round and tow the carcass, as the beast was about twenty-four feet in length, and must weigh several hundredweight (the last I believe it did); but when we had hoisted it on board, it was found to measure only thirteen feet.

It was a great encounter killing him. We could not shoot, as we wished to preserve his skull intact, so his head was hit with a lead-weighted stick, the beast blowing loudly through his proboscis, squirming his huge body, raising head and tail high off the ground, till the back became a semicircle; four people at him all at one time, all very much inclined to stand off, and keep clear of his angry mouth, teeth, and the hard lashing of his tail; but after we had smashed the lead stick, he finally succumbed, and a knife was stuck into his throat. One of his wives, and the sea-leopard, fell easy victims, and were hoisted on board and made skeletons of, making Her Majesty's Ship, in the interests of science, a regular shambles. The sea-leopard is a large-sized seal with light markings and dark

lines on a greyish skin. The blubber on the sea-elephant was immensely thick; his eye, when dead, a beautiful opal green. On another occasion, one of the naturalists found a young fur-seal, which he killed, and carried for miles triumphantly on board.

The duck-shooting was excellent; very fair walking ground, all grass and moss, which grows in big round masses, in some places quite hard, not "giving" to your weight, while in others you sink ankle-deep in dry moss at every step. In a good day's walking we could make sure of nine brace; sometimes in an afternoon during a stroll of two or three miles, I brought back three and four brace, half the time sitting near the shore, and shooting them as they flew over. But the ducks in the vicinity of the ship soon got wild. One day two of us went in the captain's boat about five miles down the coast, where we landed with difficulty. Shags and sheathbills were sitting on the rocks, and then, oh horror! thirty yards of a penguin rookery to go through—golden-crested, half an acreful of them, and all with young ones!

I would rather do many horrible things in preference to walking through a penguin rookery. The round slippery stones; the pecking, howling brutes; the having to clear a path by sweeping them aside right and left with your gun; the having, meanwhile, to keep your legs on the dirty ground (and what would happen if you did not!); the closing-up of the path behind by these bird-savages; and above—beyond everything—the sickening stench! oh, ye powers! Still, it was better than at Nightingale Island, for here one walked in the open air, and not through tussock grass, a foot higher than my stature, and there were no flies, either, to bother one with an unasked-for meal. But Styx is passed, and up gets a flock of half a hundred duck from a little pool at our feet—Bang! bang! a dozen fell, surely? but only two birds are bagged! The others went into holes—must have. Here you are! look at these holes, quite evident! and thus we console ourselves.

This part of the island is a great extent of low flat land, stretching twelve miles from the foot of the mountain chain, near which we are anchored, and dotted with small lakes, while a solitary steep hill—called by Captain Cook, Mount Campbell—crops up in the middle, forming a most useful landmark to the low ground surrounding it. Here, once again, scattered thickly over many square miles of ground, were the “great” albatross sitting on their nests. Good hard walking ground, and any number of ducks, so many, that, having no gillie, I was fain to leave off shooting. Marvellous birds! caring little or nothing for shot, unless in the head. I have fired deliberately at a duck sitting some twenty yards from me four times, after which the duck—feeling doubtless bored—flew away; and this—and to every other shooter it also has happened—half a dozen times over.

On the lakes ducks were swimming, and little black-capped terns were fluttering alarmed over the grassy shores, where they had their nests. I came across a sea-elephant about a mile from the sea, by the side of a stream. He did not seem at all happy, grunting and blowing, as he floundered heavily along the ground. Their progressive motions on land look awfully clumsy, and must be intensely tiring, I should think. We “chin-chinned” each other, he “ughing” noisily, and turning his head angrily—which made me jump—as I tapped him on the back, and then we continued our respective ways. Along the shores at intervals were large penguin rookeries, their sweet odours borne along by the breeze. An odd effect is produced at a little distance by the constant shaking of the flappers as the penguins stand up, causing a perpetual shivering throughout the densely packed rookery.

A strange land this—penguins, ducks, albatross, and sea-elephants, all close together, and all on dry land!

We brought back about twenty brace of duck.

An American sealing schooner came into Betsy Cove on the fourth day of our stay there, of which we were very

glad, as we wanted information about harbours to the southward. She had come up from Heard Island about two months ago, and was now looking out for whales along this coast. The chief mate was a Scotchman. Also on board was a large black dog, which I coveted, and tried hard to get the captain to sell, but at first he would not. They told us of a good anchorage to the southward, and gave us much information concerning sealing, whaling, &c.

There are two schooners down here belonging to the same owners; a barque, which has just left, coming every year to take such whale and elephant oil as they may have got during the season, which she takes home, leaving the schooners alone till the next year. The whaling season has just commenced, and they think they do very well if they get three whales during a season. The elephant oil, which they get chiefly from Heard Island, is not so valuable as whale oil. It appears to be a hard life with bad pay, but most of the crew look as if they had left their country for their country's good. Their astonishment at seeing us anchored in "Desolation Land" was most amusing.

Our digging operations have produced four kinds of birds, which all live in holes burrowed into the soft moss and turf—the little grey "prion" which always follows us at sea; two kinds of large petrel—one of which we have not seen before or since; and a little puffin about the size of a stormy petrel. They all had eggs or young ones; the young looking like balls of grey worsted, with a beak sticking out in one place, the only means of perceiving what was head and what tail. Odd to dig birds out of the ground like potatoes, isn't it? We also found—above ground—the nest of shags, sheathbills, terns, and ducks; a duck would suddenly start up from under our feet, sometimes followed by a brood of pretty, tiny ducklings, the old mother feigning in the most civilized manner to be wounded, as if, which they can't be, accustomed to dealings

with human beings. We also caught several mice, which have been introduced by the sealing schooners.

One day, about two miles from the sea, I came across a small colony of king penguins. Here they are moulting, while at Marion Island they had eggs and young ones. A king penguin is, as a king has a right to be, a most pompous, solemn being, not to be frightened by the *genus homo* too easily. If they do forget themselves so far as to waddle away for a short distance as you approach, they will soon stop and face you, their upturned heads palpably asking what the dickens you want, and who cares for you? So provokingly evident is their contempt, that the very least thing you can do is to smite one or two on the throat as a suitable answer, which takes their breath away for a time, and induces respect among the remainder. They appear to pass their existence when on shore in standing still, yawning, occasionally pecking at their feathers, and sleeping—standing bolt upright, with their heads turned down on one side like an ordinary bird, only penguins have no wings to put them under. In this position they appear headless and eerie. Sometimes also they lie flat on their breasts.

To try how long they could live under water, we put a crested penguin into a lobster-pot and sank it a few feet; it came up drowned in five minutes, and was dead probably a great deal sooner. One of the men hauled up a penguin instead of a fish when bottom-fishing. We scarcely caught any fish in the many harbours that we anchored in, but the sealers told us that off some outlying rocks near Betsy Cove, rock-fish were to be caught in great quantities.

On the morning of Jan. the 16th, we left Betsy Cove, getting a good blow that night, and next morning steered along a low grass-covered land, dotted white with albatross sitting on their nests, and large penguin rookeries at frequent intervals along the shore. While the ship stopped and dredged, a boat landed under a high foreland, where

we saw two more sea-elephants, and shot a great many ducks, and then we steamed up "Royal Sound." A magnificent sound, running many miles into the land, the upper end crowded with small islands, among which we anchored in the evening, finding a sealing schooner at anchor, this being their head-quarters. To the north and west are fine mountain ranges, the western shore of the sound being lined with a volcanic line of high conical hills.

Next day we had some capital duck-shooting, steaming farther up the sound in our steam pinnace; a bright sun, water smooth as a mill-pond, and studded with small green islands—quite lovely! The captain of this sealing schooner was a regular Yankee character. "Guessed we were out of our reckoning, and how on airth did we find our way in here?" It being explained that we were a "discovery ship," he "guessed there was another island down south we could go and discover!" (Meaning Heard Island—this was sarcasm.) Asked if he would dine and come to church on Sunday, he "guessed he had not been to church for fourteen years, and did not think he would commence again now." We stayed here—in Island Harbour—two days, during which time the surveyors surveyed the coast around. It blew heavily for two or three hours one afternoon, the bay becoming a white sheet of spray and spooondrift.

On the 20th we went out into the sound, anchoring there for the night, and next day steamed to Greenland Harbour—another long narrow bay, its head separated by a strip of low land from the head of Royal Sound. High grass-land all round. In the afternoon we landed to shoot duck, which, however, were wilder here than we have found them elsewhere, and comparatively few were shot. While I was sitting down on the grass by the side of a large hole, burrowed horizontally in the hill-side, a large brown petrel gently flew down by my side. I stroked its head, and then it quietly walked into the hole. A truly unsophisticated bird! Afterwards, on the beach, as I sat

on the rocks, smoking by the sea, getting an occasional shot at a duck, up wallowed out of the kelp a very large sea-leopard, flopped on to a rock, and there lay down not five yards from me. I watched him for a long time, and made all sorts of remarkable noises to see what he would do, which was nothing beyond looking very much bored, raising his head, opening his mouth, and sighing loudly. At last I stood up, when he gave a loud grunt, flapped off the rock, and slid into the sea without the slightest splash. This one was more than double the size of the two that we had seen before. On another part of the shore was a large sea-elephant.

We weighed the next morning in a squall of wind and snow, and stood out with the intention of getting back to Christmas Harbour. All that day and the two next we were beating against a head wind, which blew a gale on the second day, and a heavy sea smashed in some of our ports. On the evening of the 24th we ran into "Cascade Reach," in hopes of finer weather on the morrow, but the weather getting worse, we ran into Betsy Cove again—only a few miles distant—for shelter next morning. That forenoon, as we lay at anchor, a very heavy squall struck us; the ship dragged her anchor, obliging us to let go another, after which burst, it became very fine. When we were here before, it began one morning to blow very hard all of a sudden; the ship tailing close on to the rocks (for though Betsy Cove is a good harbour it is very small, with scarcely room to swing round one anchor), we dropped another anchor in a hurry, laid a warp out, making it fast to a large boulder on shore; hove up one anchor, warped ahead, and dropped the anchor again, by which time it had fallen a dead calm, with a bright blue sky. This to show you that it is not all fun and shooting at Kerguelen's!

Jan. 26.—Off this morning at 4 A.M.; beating up along the land all day, with a good breeze, smooth sea and fine weather. In the evening we anchored in "Hopeful Harbour," another of these good anchorages in fine bays, with

which this island, where no man lives, is so profusely blessed. More duck-shooting that evening. Off again early next morning. While beating up along the land, we saw two schooners in the afternoon, one of which was our old friend. They had just left a small outlying island, where they had killed and skinned 45 fur-seal in a couple of hours. The captain asked them to anchor with us tonight, wishing to pump the new captain; so that evening we ran into and anchored in another large bay, between high grass-land and some small low islands, with the two schooners close to us. Their skippers dined with us in the evening, and the owner of the dog which I coveted at last agreed to sell him to me, so "Sam" is now on board—a charming great black curly-haired Newfoundland.

We had splendid shooting next day, ducks in hundreds, and ridiculously tame. One of our fellows killed four brace with stones and sticks while walking along the shore! He also had a tremendous fight with a fur-seal. He tells the yarn as excitedly as if he had killed a man-eating tiger. He certainly was very much frightened; the seal jumping at him with big jumps, he in his fright falling backwards over a stone, the seal grunting loudly and alarmingly, and "close aboard." Another man coming up, they managed eventually to knock its nose about with heavy stones; but if the seal had only had the sense to make for the sea, instead of away from it, it would have escaped unscathed.

Sam is great fun, having no idea of training in the shooting way, except that of rushing frantically at every bird he sees. Spirited encounters with great albatross who can defend themselves—bullying penguins, who can't—digging little grey prion out of their holes—are his strong points. He is a splendid digger, rattling the moss and turf up with his fore-paws, now and then listening to the squealing inside, till suddenly a fluttering prion appears in his mouth, with which he plays, like a cat with a mouse. He hates penguins—a few of which were along the shore

—and they suffer terribly from Sam's teeth. For penguins, being, when on shore, the most helpless of creatures, won't try and get into the sea, but boldly face round and "stand up" to Sam, braying fiercely. Sam stands over them, nips them in the back just below the neck (experience has taught Sam where to lay hold of a penguin so that it shan't peck him), and then goes away smiling, while the penguin lies down, bleeding from open beak and Sam's nip; not pleasant, but true.

The great albatross were nesting here in considerable numbers, and also the little black-capped terns, which hovered anxiously close to our faces, uttering shrill screams, as we walked among the little fluff balls lying about on the ground. The schooners went away in the morning, one coming back in the evening again, having got 25 more fur-seal on the same place as yesterday. If we had only known what was to happen, we might have gone in her and seen the slaughter.

Jan. 29.—Away next morning, we steered up the bay for a narrow passage which the sealers had told us about—a short cut northward, thereby saving us about ten miles against a head wind. We steamed through, and anchored in Christmas Harbour that evening, dredging and trawling on the way in 100 fms., the trawl coming up stuffed with white, oval sponges, from three to twelve inches high, and covered with glassy spikes; a curious haul. We remained the next day in Christmas Harbour, and a party went away in a boat to the arched rock to see a vein of brown coal which runs between two layers of basalt a few feet above the sea near there; it is very poor stuff, and our men could make nothing of it in a fire. But how different must have been the climate of this land ages ago! The sealers tell us that there is some more of this coal in another place, but they do not make any use of it.

Jan. 31.—Good-bye to Kerguelen's to-day, having left in a cairn sealed-up copies of the harbours we have surveyed for the Transit people when they come. I have

enjoyed the "Land of Desolation" altogether very much; no bad weather as Ross had—at least not in harbour. We lived on ducks, which are quite delicious, fat as butter—but wanted longer keeping than we ever allowed them.

The sealers told us that a few years ago the inscription on a headstone above the grave of a sailor whom Cook buried here more than 100 years ago, was still legible, but the last time it was visited, it had become illegible; they told us too of a bay on the weather (west) side of the island, where a glacier comes down to the sea; of an active volcano on the same side; of some mineral springs, of petroleum, and others which, from the description, sound sulphurous; of an island in Royal Sound, where some cats, escaped from sealers, have bred, live in holes, and are as wild and untamable, even when brought on board as kittens, as if their ancestors had never been civilized.

We got two new (to us) albatross here—a "black-backed" and a species of "sooty." I wish I could put you into a boat with me here for a few minutes to show you the birds in these Kerguelen bays—the penguins jumping like shoals of mullet, or rolling and cleaning themselves on the top of the water; the little black-capped terns fluttering about, every minute diving with a splash and up again with a scream; the stupid ragged old shags (why are shags' wings always ragged?) trying to fly head to wind, but going to leeward like sacks; clouds of little grey prion flying rapidly, backwards and forwards, over the water; the black-backed gulls screaming harshly; the hideous stinkers swimming among the kelp; the brown hawk-gulls careering about, ready to fly after any bird which may have picked up something; the little stormy petrels flitting like butterflies; the pretty Cape-pigeons; the albatross sweeping around with their easy and beautiful flight,—and then, perhaps, a seal will pop up its head. It is curious that the black-backed and the hawk-gulls both chase each other if either have picked up something;

each seems frightened of the other. And now land. On the rocks are numbers of sheathbills hopping about all round; also shags; a little further, you come to a penguin rookery; then ducks, albatross and terns, all with nests, while out of holes will pop now and then a prion or a petrel; and then you will meet a sea-elephant or two, and small colonies of moulting king penguins.

Feb. 1.—Steaming and sailing along the south shore to “fix” the southern point of the island, which having done (calling it Cape Challenger), we made sail and shaped our course for Heard Island. We had a fine view of the southern coast and mountain ranges in the evening, the highest mountain of which was calculated by our surveyors to be 6,180 feet high, and called by us Mount Ross, after Captain Sir James Ross.

Feb. 2.—Blowing fresh from the northward, with heavy squalls. Dredged in 150 fms., half way between Kerguelen's and Heard Island, 150 miles from land. A dense fog came on in the afternoon, which, not clearing away till the morning of the 4th, kept us stationary all that time, “wearing” constantly, the position of Heard Island being uncertain.

Feb. 5.—Thick mist bothering us still; thought we saw land in the afternoon; still lying off waiting.

Feb. 6.—At noon we sighted Heard Island, and bore away for the anchorage. Blowing hard; tremendous squalls off the land. Anything more gloomy or utterly desolate-looking than the island it would be impossible to imagine. High black mountains, their summits enveloped in mist; great masses of snow lying on their slopes, and glaciers descending every gulley and bay nearly into the water; bold black headlands; not a speck of green to be seen anywhere. We anchored in the evening in “Corinthian Bay,” of which the sealers had told us. At its head is a long stretch of black sandy beach, from which on the left rises abruptly an enormous glacier—a mountain of ice all seamed and cracked with deep blue fissures, falling

right into the sea, stretching continuously a long way along the coast, and up one thousand feet into the mists, which concealed the mountain tops, where these glaciers all have their birth. On the right of the beach, some way back, is a high double-peaked mountain, all covered with snow and ice, excepting where black precipices prevent the snow from resting. On the right of the bay a high, black headland—its steep sides spattered white with the breasts of penguins—juts boldly into the sea, completing the round of utter gloom and desolation.

The captain and a few others landed ; a long, cold pull to the beach, where they got on shore pretty easily, though the sealers had told us we could not possibly do so in any of our shaped boats, on account of the heavy surf almost perpetually breaking there. But this evening there was no swell, the wind being off-shore. Wading a muddy stream which ran across the beach from the foot of the glacier, they found half a dozen wretched sealers living in two miserable huts near the beach, and sunk into the ground for warmth and protection against the fierce winds, so fiercely blowing at the time our party landed that they found it necessary to protect their faces from the clouds of sharp sand¹ which were being whisked about. Their work is to kill and boil down sea-elephants as they land. One man has been here for two years, and is going to stay another ! They are left here every year by the schooners, while they are sealing or whaling elsewhere. The beach is strewn with the skeletons of sea-elephants.

This beach continues in a sandy plain right across the island—here only a mile broad—opening on the sea to the S.W. The double-peaked lofty mountain, and the black headland are separated by a narrow bay, and joined to the ice-covered portion of the main-island by the low sandy

¹ Our physicist says :—Nowhere have I seen the abrading power of blown sand better exemplified than on the isolated rocks which have rolled down from the rocks above, and exposed to the constant strong S.W. gales, driving the sharp volcanic sand against their sides, by which they have been cut and dressed as by a mason's chisel.

plain. The mountain springs precipitously from the sea, and from between the two peaks a glacier rolls grandly down, descending to the edge of the cliffs overhanging the sea, over which great masses of ice fall with a thundering noise. The black headland is covered by very recent lava, the eddies and ripples of which are still quite fresh.

There are forty men on the island altogether, living in different parts, the duty of some parties being to *whip* off sea-elephants as they land, in the hope that they will land in Corinthian Bay, which is the only beach from which they can manage to get the oil off to the schooners, the tremendous surf rendering it impossible everywhere but here, and here only occasionally. This whipping is performed with whips made from the skins of sea-leopards—the only use they make of them. Of course most of the island being covered with glacier makes it impracticable for the men on one beach to communicate with the others by land. They have barrels of salt pork and beef and a small store of coals; but penguins, a heap of which lay outside the hut, thrown on dead, and with no other preparation, appear almost as good for fuel—an admirable way of making these fiends of some use.

This island was only discovered in 1853, and was at once visited by sealers. The island then “swarmed” with sea-elephants, soon to be driven away altogether probably. One sea-elephant will make five good-sized barrels of oil. Books tell us that these sea-elephants grow to the length of 24 feet, but the sealers did not confirm this at all. We tried hard to make the Scotch mate say he had seen one 18 feet long; but “Waul, he couldn’t say.” 16 feet? “Waul, he couldn’t say.” 14 feet? “Waul, yes, yes, something more like that;” but 13 feet would seem a fair average size. The sealskins sell from twelve to twenty dollars, according to size and quality. One of our fellows bought a clever little clay model of two men killing a sea-elephant, giving for it, he being an extravagant man,

one pound and a bottle of rum. The pound was instantly offered to the servants outside in exchange for another bottle. The harpooner was an American Indian, and a fine-looking fellow. Many of the crew are Portuguese, who are picked up from Brava, one of the Canaries, and the Scotch mate described them as not having the "pluck to face a penguin!" They are wretchedly paid, and must have been "taken in," I should think. One of these schooners lost a boat and two men in that bay in Possession Island (Crozet), off which we were one evening, and which I described as not looking pleasant. I have forgotten to mention that the dredging among the shallow waters of Kerguelen was very successful.

Feb. 7.—We weighed early this morning, an easterly breeze and swell having set in with a rapidly falling barometer, and a gale evidently coming. Snow fell heavily during the night, and such portions of the land as were black yesterday are white to-day; too dismal for words. Going away in such a hurry was tiresome, as we wanted to get a photograph of the glacier. We had promised to send the sealers some grog, so they, too, must have thought our sudden departure tiresome.

There are no ducks on Heard Island. Cape-pigeons were building in bubble-holes in the face of the black lava cliffs round the bay. The cabbage grows here, but is of poorer growth than on Kerguelen's Island.

We got a good haul of the dredge before the expected gale came on, which it did heavily in the afternoon from the north-west; and a heavy sea that night struck the ship forward, smashing in two ports, much to the enjoyment of the sick who were lying in bed behind them.

Our destination now is "Termination Land," marked on charts as a good stretch of coast seen by Wilkes, the commander of the American expedition which explored here 30 years ago, who only describes it, however, as an "appearance of land." The four following days we ran 550 miles to the southward, and sighted the first iceberg on the

morning of the 11th, in lat. $60^{\circ} 30'$ S. It was seen at about five miles' distance as a glimmering patch of white against the night sky, and as daylight dawned and we sailed close by it, we saw it to be a large tabular berg about two-thirds of a mile long and 200 feet in height; the top flat and covered with snow, and the perpendicular sides coloured a whitish green—a magnificent sight, to which afterwards we got accustomed. It being nearly a calm, we trawled in 1,260 fms., with the result of a few shells, stones, shrimps, and annelids. Being on the other side of the berg, now, we saw some low blue caverns worn deeply into its side. While watching it in the afternoon, a cloud of spray was seen to rise against it, and when this subsided we saw great masses of ice, which had then fallen off, floating alongside, while the berg rolled perceptibly. Two others were in sight a long way off, their snow-topped summits and portions of cliff visible above the horizon. In the evening we passed close by a large "calf;" also some smaller pieces—drift and wash ice.

Feb. 12.—A fair wind and fine weather. Passed three icebergs during the day, small, and of irregular shape—tabular ones which have capsized and split up; and in the evening we passed another, with much loose ice floating in a stream to leeward, through which we sailed. The colouring of this berg was lovely, sweeps of azure blue imbedded in cliffs of alabaster whiteness, against which a bright green sea washed high. The green colouring of the sea here is caused by the presence of minute algæ, through a belt of which we passed for two days.

Feb. 13.—We have run 240 miles to the southward since meeting the first iceberg, having in that distance only passed 13, but now they are rapidly becoming more numerous. Sailing along with a fair breeze all day. Passed a very long tabular berg this morning, and this evening close to a high-pinnacled one—quite beautiful! the azure blue of the deep fissures and caverns; the sea rushing up the worn-away cliff in great blue waves, falling back, or

pouring over curved knife-edges of ice in a torrent of foam and spray. Wilkes' Land 396 miles off.

Feb. 14.—Running slowly along in thick weather last night, we suddenly found ourselves in a sea covered with ice—the edge of a pack—large blocks of loose ice grinding against the ship's side, startling some of us rather in bed. We hauled our wind at once and soon got clear of it. Many bergs close around.

Daylight revealed the pack ahead, the outside loose ice of which we had run into last night—a white rugged field of ice, stretching along five or six points of the compass, with numbers of huge table-topped bergs rising above it. From the masthead we could see scarcely any clear water among the ice, which to the eastward was densely packed, but not so much to the southward.

Dredged in 1,675 fms. among the "stream-ice," a mile and a half off the edge of the pack, but got next to nothing—a squid and some stones. A lovely sunny afternoon, lighting up the glistening pack, bergs, and small ice spread thickly over the water; penguins leaping, and "wh-a-a-ing" loudly; whales blowing in great numbers, and several kinds of birds flying about.

To-day, for the first time, we have the "snow-bird," a pure white petrel—a most beautiful creature. They always keep near the ice, and if seen when yet no ice is visible, are taken as "sure sign of ice." They fly higher than other petrels, of which species another new one—light-brown and white—joined us yesterday. Besides these we have the sooty albatross, Cape-pigeons, stormy petrels, prions, stinkers, night-hawks, and the penguins—crested and another—in the sea.

In the evening we made sail and stood to the westward, following the edge of the pack to see what would become of it. This pack-ice is very annoying, effectually barring our road south, where, this being a totally new field of Antarctic exploration, we might have found new land! Anyway we had hoped to see the great ice-barrier, that

endless wall of ice two hundred feet in height which fringes the southern continent. Wilkes' Land 420 miles off, bearing east-south-east.

No words of mine can describe the beauty of these huge icebergs—one, which we have just sailed past, had three high caverns penetrating a long way in; another was pierced by a hole through which we could see the horizon; and the wonderful colouring of those blue caverns, of the white cliffs, dashed with pale sea-green, and stratified with thin blue lines veining the semi-transparent wall of ice 200 feet in height! As we slip slowly by at night with a light breeze, we can hear the waves roaring against them ceaselessly, and thundering into the caverns. Showers of small snow falling, and freezing on the decks. This evening 47 large bergs, independently of those in the pack, were in sight from the deck, while the pack extended from south-west to east. A very light southerly wind, and a calm sea. (Lat. 65° 30' S., long. 79° 40' E.)

Feb. 15.—Pack in sight all day, extending from south-east to west. Tacking about against a light head breeze. At noon a chain of eight long bergs and low masses of ice extended almost without break from north to south-west. Immense numbers of whales spouting wherever one turns, their great carcasses rolling along. As far as we can make out there are very few "right" whales; the sealers told us of four kinds—"right," "finner," "sulphur-bellied," and "hunch-back." The only way an inexperienced individual (which everybody is who has not been on board a whaler for a time) can tell a "right whale" is by the absence of a fin on the back, a hard thing to make out at a distance. Whalers say they can tell a "right" from the shape of their spout. The schooners never venture down here, getting their whales from close around Kerguelen, while they only go to Heard Island for the sea-elephants.

This evening there was a fine crimson sunset, followed by a strangely white silvery twilight in the

western sky, and all night long a bright red line of light glowed along the horizon, broken here and there by the sharp-cut form of an iceberg, between the dark night sea and sky. This band of light was caused by the sun, which does not go far below the horizon now, being refracted off the pack—beautiful, as is everything in this world of sea and ice *in fine weather*. Great numbers of bergs around. (Run to-day 38 miles, W.S.W.)

Feb. 16.—Sailed into the loose ice—apparently thick to the westward—at the edge of the pack again last night in the darkness; tacked out of it. Numerous bergs around the ship. A beautiful, almost calm morning. Got steam up and steamed to the southward for two hours, crossing the Antarctic circle and entering eight miles into the Antarctic sea. At that point there was only pack-ice visible to the northward, the atmosphere to the southward and eastward was beautifully clear, but no sign of land was visible over that apparently open sea. As it was not, however, our object to explore into high latitudes, we turned back, made sail and headed northward to trace the northern edge of the pack towards Wilkes' Land, having already traced its western edge from where we first ran into it. Under the same circumstances—clearest imaginable weather and sky—Ross saw high land at a distance of 120 miles. We saw a small blue berg to-day with no snow on it, the whole colouring being like that of sulphate of copper. Any number of icebergs, a shoal of grampuses, and *innumerable* whales, almost all "finners." (Run S. 18° W. 32 miles, lat. 66° 29' S., long. 78° E.)

Feb. 17.—Hove to under treble-reefed topsails last night at ten o'clock, fresh breeze from east, misty weather, and heavy squalls of wind with thick snow showers. "Filled" at three o'clock in the morning, and stood to the eastward all day, passing singularly few bergs, in the afternoon only one being in sight. Crossed our track of the 13th in the evening, the sea again a green colour in the same place. Temperature 28°, sleet and snow freezing on the deck.

Wilkes' Land 440 miles to the east-by north. (Run N. 15° E. 87 miles, lat. 65° 5' S., long. 78° 55' E.)

Feb. 18.—Sighted the pack again this morning ahead and on starboard beam, about 100 miles to the eastward of where we first saw it. We sailed quickly along the edge all forenoon on a smooth sea with a fair breeze, boring through "stream ice," great flat cakes of ice which had streamed off the heavier pack. What a sight from the mast-head! The rough field of ice stretching away as far as one can see; the great bergs in the pack and open water outside, tabular and pinnaced, deep blue caverns worn away in their lofty sides; and the stream ice—flaking white and thickly the dark sea—through which the ship was rapidly and quietly shoving her way, leaving a broad black lane of water behind her, "starboard" or "port" being hailed every minute, to clear some piece too heavy for pleasant bumping. The ice became too heavy at last, so we hauled out of it. At noon we passed the northern point of the pack, which then trended away till lost sight of to the south-east, while we kept on to the east-south-east; 20 bergs in sight in afternoon, and getting rarer as we went on. A very cold, though fine day, temperature 24°. Thick fine snow falling to-night, lying two inches deep. Wind shifted to north-west. (Run N. 80° E. 116 miles, lat. 64° 44' S., long. 83° 26' E.)

Feb. 19.—Calm in the early morning. Sounded in 1,800 fms., took serial temperatures, then stood to the southward to "make" the pack. In the afternoon we tacked and stood to eastward with a fresh southerly breeze, no signs of the pack and no ice-blink; 40 bergs in sight. In the evening we passed a very high one within a ship's length, in which there was a high arched cavern of the most indescribably lovely colour—no painting could realize it, and if it could, you would not believe its truth; the colour and exquisite softness of the blue, from light azure to indigo in successive shades as the cavern penetrated deeper and deeper into the berg, with fringes of icicles hanging from

the roof. Fancy slipping past an ice-cliff, and suddenly opening a scene such as this! Wilkes' Land 240 miles off. (Run N. 83° E. 61 miles, lat. $64^{\circ} 37'$ S., long. $85^{\circ} 49'$ E.)

Feb. 20.—Hove to last night; dirty-looking weather, and blowing fresh. Filled at three o'clock in the morning, and soon afterwards passed through a group of small bergs—not seen till close to. A fine day, and ship lying her course with a southerly breeze. Bergs very numerous, 69 in sight in the evening. Penguins heard crying. Saw a good example of how tabular bergs split up—a clean cut above water, though still connected below; also another blue berg. (Run N. 36° E. 61 miles, lat. 64° S., long. $87^{\circ} 41'$ E.)

Feb. 21.—A beautiful sunny day, and dead calm. Ship lying motionless on a glass-like sea, large tabular bergs close around. In the afternoon we steamed alongside a high berg, from which, on one side, a ledge projected, terminating in a cliff some fifty feet high. When a short distance off we fired a 9-pounder Armstrong into this cliff. Bang! followed by a rattling crash as if the whole berg was coming down about our ears. For a depth of several feet, and a length of about ten yards, the whole face came cracking, splitting, and splashing down with a roar, making the water below white with foam and powdered ice. We then fired into the high upper cliff, which, being softer, the shot plunged into, leaving scarcely a mark. We got a fair photograph of this berg. The sun went down in a golden blaze, lighting up the clouds most gloriously, and also the bergs, of which there was 78 in sight from the deck. Steamed on, after "swinging ship" for deviation of compasses. A smooth sea, no wind, and a brilliant aurora flashing in the sky. (Run N. 51° E. 48 miles, lat. $63^{\circ} 30'$ S., long. $89^{\circ} 6'$ E.)

Feb. 22.—A bright-red sunrise, beautiful calm day and quite warm— 34.5° . Steamed near a berg this morning, on which we thought we might possibly land, but could not

after all. A flock of Cape-pigeons were nestling among the soft snow on the slope of the berg, almost completely covered.

All these icebergs are stratified at more or less regular distances with blue lines, which, before the bergs become capsized or canted from displacement of their centres of gravity, are perfectly horizontal. Every one which we have seen has evidently been broken off from the "barrier" for some time, deep caverns being worn away in their sides, while many are split up, canted, or completely capsized.

Whales blowing on the horizon, their spouts miraged into large black columns, which in one instance I mistook for a waterspout. Made sail in afternoon to a light fair breeze. (Run east, 50 miles, lat. $63^{\circ} 30' S.$, long. $90^{\circ} 47' E.$)

Feb. 23.—Steering south-east last night with a light breeze. Daylight, "land on starboard bow" reported by look-out man. A high, dark, broken range of mountains it looked like; but, watching carefully, one saw it almost imperceptibly changing its form, whereby we on the bridge knew from the first it was only a cloud. But cloud so like land I never saw before. At noon we were 45 miles distant from the supposed position of Wilkes' Termination Land. Steamed on to the southward. Great numbers of very long tabular bergs in sight, 88 at one time, groups forming long chains, giving us a very good idea of what the "barrier" must be like. At five o'clock the pack-ice was seen ahead and on both bows. We ran close up to it, and sounded in 1,300 fms., 20 miles to the west of Termination Land, the weather singularly fine and clear in all directions, but we saw no sign of land. (Lat. $64^{\circ} 18' S.$, long. $94^{\circ} 47' E.$) In a glorious berg, which we passed within a few yards, was a cavern, tunnelled by the waves, penetrating the entire length, through which the swell went tumbling and tossing wildly. Whales very numerous again; they appear to keep near the pack. It has been a beautiful

day, an occasional light shower of snow and a fine golden sunset. (Run S. 58° E. 84 miles.)

Feb. 24.—Hitherto we have had tolerably fine weather, nothing much to disturb our peace of mind except darkness, snow-squalls, and thick weather among icebergs. But now we are going to have a disagreeable change. During the night we hove to, and at four o'clock put the dredge over; but the wind suddenly coming on to blow fresh from the southward, the dredge was hove up in a hurry, by which time it was blowing a gale, with heavy snow-squalls and very thick weather. Having steam up we went under the lee of a sloping-sided berg, and trebled-reefed the top-sails. During this operation the eddy current carried the ship too near. Bump, bump! smash, crash! as the ship rose and fell with the swell, spearing the ice with the "dolphin striker," which, as well as one "whisker" and the "jib-boom," carried away, leaving all the head-gear in a state of wreck, while the men aloft, thinking they would have the top-gallant-mast about their ears, scurried down with extraordinary activity.

We then sheered off, hove to under storm-trysails, got steam up ready in four boilers, laid the yards ready for making a "stern-board," and so drifted along; the gale increasing fast, weather thick as pea-soup, and small, very hard snow pinging into one's face like a shower of peas blown through a steam-blast. Temperature 22° (the coldest we experienced, but 22° with a "whole gale" blowing over the pack feels very much colder than it sounds).

We drifted on all forenoon, seeing no bergs through the fog and blinding showers of snow, though we knew that they were close around somewhere. In the meantime we were hard at work getting in the wreck of the head-gear—no easy work in the intense cold and violent wind—when suddenly, at three o'clock, in the middle of a tremendous thick squall, comes the hail from the forecastle, "Iceberg close to under the lee bow, Sir!" There is no room to

steam ahead, so "full speed astern!" Rattle, rattle, goes the screw, sixty revolutions a minute; "Clear lower deck, make sail!" shriek the boatswain's mates; on deck flies everybody; "Maintopmen aloft, loose the maintopsail!" "Fore part, take in the fore-trysail!" The captain and commander howling out orders from the bridge, hardly heard in the roaring of the wind; officers repeating the howls. The weather-clew of the maintopsail set aback, the headsails taken in, slowly she gathers stern way, keeping her head turning slightly towards the berg, a towering, dim white mass looming grimly through the driving snow, and then she clears it—a narrow shave!

The violence of the wind prevented us then from making a friend of our enemy by keeping under its lee, so the ship was again allowed to drift on, amid dense fog and snow, till five o'clock, when another iceberg was seen at a little distance ahead, to leeward of which we drifted, where, the wind being broken, the ship's head was turned by means of steam and sail, and all night long we kept dodging backwards and forwards between these two bergs, where we knew the sea to be clear of dangers. In the evening the weather became clearer, though it still blew hard; deck covered with slush ice. Anxious work enough for the officers of watches and the captain, who was on deck for I don't know how many continuous hours. It was very lucky that this fog and heaviest part of the gale came on during the day; they would have been more than disagreeable at night. An iceberg in fine weather is a beautiful sight, but in a fog and gale of wind it is very much the reverse. (Run N. 73° E. 27 miles, lat. 64° 8' S., long. 94° 23' E.)

Feb. 25.—Made sail at 3 A.M., the wind having gone down at midnight, and soon afterwards we sighted the pack ahead, into which we ran a mile among the stream ice—big masses of low flat ice, the heaviest stuff we have been in yet. At noon we were 15 miles to the westward of the supposed position of Termination Land, with a clear sky

to southward and eastward, where, however, no land was visible, and so we don't now believe in its existence at all. But, after all, Wilkes, though he draws a good long line of coast on the chart, describes it only as "an appearance of land was seen to the south-west, and its trending seemed to be to the northward," and computed its distance away from him at 60 miles. We stopped among the ice for some time, examining dirty-looking ice, which was found to be caused by diatoms, small crabs, &c., lodged there by the wash of waves. Then we made sail to a fine breeze from south-west, and put the ship's head north, away from Antarctic work, bound for Melbourne—thank goodness! (Run N. 16° E. 87 miles, lat. $62^{\circ} 26'$ S., long. $95^{\circ} 44'$ E.)

Feb. 26.—Trawled in 1,975 fms.: a quantity of granite stones; an umbellularia; a very large serolis—the nearest approach to the ancient trilobites known—about two inches long; sea-urchins, one of which has been got already in the north, but was then supposed to be a deformity; star-fish; and four fish—one with glittering scales, of which only a few remained, the rest having been rubbed off by the net; and great numbers of large and small holothurians.

The wind freshened from the northward in the afternoon, and blew a gale in the evening, with a heavy fall of wet snow, large soft flakes, coating deck, rigging, and sails; great "fids" falling from aloft splashing all over one. 40 icebergs had been in sight during the day, but now in the snow-storm—through which we could only see about 200 yards—they were all hidden. After knocking about for a time under close-reefed topsails, while full steam was being got up, sail was furled, and with steam and reefed spanker we crept to leeward of a large iceberg, which we luckily sighted before dark, and kept under its lee all night, just able to keep her there, and head to wind; blowing very hard, violent squalls, snow turning to rain.

Feb. 27.—At 3 A.M. we made sail to close-reefed topsails and ran to the north-east before the gale (decreasing during

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the day), passing numerous icebergs. The wind blew fresh from the westward, with showers of snow, till March the 1st. Ship careering along with all the sail she could stagger under during the day, and heaving to at night. On the 28th, no more than 24 bergs were in sight at one time; on the morning of the 1st only four, and in the evening one; so that night we did not stop, and nearly ran into a large berg in the middle watch, when going about nine knots, and so close that the sails flapped for a moment under its lee. On the afternoon of the 2nd no ice was seen, and the half gale was lessening.

March 3.—Trawled in 1,950 fms. on white diatomaceous ooze. A great haul of holothurians, mud, starfish, shrimps, echinoderms, several umbellularia, a few fish, and a large stone with sea-anemones on it. No ice seen during the day.

March 4.—To-day one berg was seen, and it proved to be the last. (Lat. $53^{\circ} 17' S.$, long. $109^{\circ} 23' E.$) The past three days we have had a series of gorgeous sunsets and sunrises, which being trite subjects, I will tell you only of one. Towards the evening, the sky being cloudy, a long low arch formed over the western horizon, spanning it to an altitude of 20° . Below this the sky was clear and blue, above cloudy, the boundary line of the arch misty, but distinct; and then, as the sun set, the blue seen through the arch became a pale apple-green, with small crimson clouds floating in it, while above the arch the clouds became dark purple, flushed with crimson.

We trawled three times more on our way to Melbourne; in 1,800, 2,150, and 2,600 fms., getting capital hauls each time. The bottom in the last sounding was red clay with nodules of manganese. We arrived at Melbourne on March the 17th, and so ended happily our Antarctic cruise.

The largest icebergs we saw were three miles in length; several bergs of this size, and 200 feet in height, were seen one day all close together. But bergs of such enormous

dimensions were exceptional, and more commonly they were only half a mile and under in length, and from 150 to 248 feet in height.

Whenever we trawled in the Antarctic Ocean, we brought up large quantities of stones—fragments, more or less rounded, of basaltic and other rocks, carried and dropped there by the icebergs. Between Kerguelen and Heard Island, from a depth of 150 fms. these were particularly numerous, and in this case came, no doubt, from the glacier "calves" of ice-sheeted Heard Island.

The serial temperature observations have given remarkable results, showing, as they do, that a band of water colder than that which lies above and below it exists at a depth of from 80 to 200 fms. "When at the pack edge, the temp. of the water was always between 28° and 29°, just sufficiently warm to melt salt water ice very slowly, but to have no effect on the fresh water berg-pieces. At a short distance from the pack the surface water rose to 32°, but at a depth of 40 fms. we always found the temp. to be 29°; this continued to 300 fms., the depth in which most of the icebergs float, after which there is a slightly warmer stratum of water of 33° or 34°,"—which gets gradually colder, till, at the bottom, its temp. is between 29° and 30°. The lowest stratum of water is evidently the continuation towards the cold regions of the main oceanic flow of water. The upper stratum is the summer-heated water; and the intermediate cold stratum may be the winter-cooled sea—which has, during the short summer, not time to recover its temperature.

The temperature of the bottom we could not get correctly, as the thermometers had already passed through belts of water, one of which was warmer, and the other colder, than the temperature of the bottom water.

Says our physicist: many different opinions have been expressed as to the nature of ice, resulting from freezing sea-water, all agreeing, however, on one point, that, when melted, the water is unfit to drink. I took the opportunity, therefore, of examining some pack-ice, and also some ice which had formed in a bucketful of sea-water.

The investigations led to this:—that the salt is not contained in sea-water ice in the form of mechanically inclosed brine only, but exists in the solid form, either as a single crystalline substance, or as a mixture of ice and salt crystals. Common salt, when separating from solutions at temperatures below 32°, crystallizes in hexagonal planes.

A very important practical consequence follows, namely, that pack-ice though unfit to drink when a lump of it is melted as a whole, may serve as a source of fresh water if melted fractionally. As the melting point of the salt ice is lower than that of pure ice, it melts first, and at the same time, by keeping down the temperature of the mass to its own melting point, it prevents any of the fresh brine being wasted. When the salt ice has been all melted the brine may be thrown away, and the remainder of the ice will supply fresh water. If a thermometer be kept in the ice during the process of melting, it will indicate by its reading when drinkable water is being formed.

All the icebergs we saw were remarkably clear of rocks or stones, but *dirty* ice we saw frequently—caused by living organisms, lodged there by the waves. Captain Nares says: "To the eastward of 92° E. icebergs were very numerous, and continued so as we ran to the E. even when we were at a distance from the pack. Their absence between 70° and 80° E. long., except when close to the pack edge, was so marked that,

coupled with their absence on the same meridians in lower latitudes as shown by the ice-chart, I am led to believe that there can be no land for a considerable distance south in that neighbourhood, and that a very high latitude could be gained there if desired." He believes that the pack-ice which we first struck was a detached pack, similar to that sailed through by Ross in 1841. "The pack-ice consisted chiefly of small salt water ice-pieces—they cannot be called floes—from 30 to 50 ft. in diameter; 100 miles inside the pack-edge Ross found them to be 200 yards in diameter. The single season's ice was about 3 ft. in thickness; the hummocky ice, formed by several layers heaped one upon another and frozen compactly together, was from 7 to 8 ft. in thickness. Scattered about in the pack were a few blue-coloured berg-pieces of all sizes, some of them frozen into the salt water ice. All the latter were much honeycombed by melting, but it was evidently still of sufficient strength to give a very dangerous blow if accumulated against a vessel's side, or to a vessel forcing her way through the pack. A properly fortified ship could have made way through most of the pack-ice we saw, and it certainly does not deserve the name of a 'barrier' given to it by Wilkes, although he was perfectly justified with his unfortified ship in keeping out of it." We saw no seals or sea-elephants among the pack.

Let me remind you what the "Barrier"—which we did not see, but of whose awful grandeur we got a good notion by seeing icebergs 3 miles in length, and 200 ft. in height, grouped close together,—which forms the terminal wall of the ice-capped Southern Continent, is like: "Sir J. C. Ross, after reaching the highest southern latitude which has yet been attained, found all his attempts to penetrate further frustrated by a precipitous wall of ice that rose out of the water to a height of 180 ft. in places, and effectually barred all progress towards the pole. For 450 miles he sailed in front of this cliff, and found it unbroken by a single inlet. While thus coasting along, his ships were often in danger from stupendous icebergs and thick pack-ice, that frequently extended in masses too close and serried to be bored through. Only at one point did the ice-wall sink low enough to allow of its upper surface being seen from the mast-head. Ross approached this point, which was only some 50 ft. above the level of the sea, and obtained a good view. He describes the upper surface of the ice as a smooth plain shining like frosted silver, and stretching away far as eye could reach into the illimitable distance. This ice-cliff is the terminal front of a gigantic *mer de glace*, which, nurtured on the circum-polar continent, creeps outward over the floor of the sea until it reaches depths where the pressure of the water stops its farther advance by continually breaking off large segments from its terminal front, and floating these away as icebergs." (*The Great Ice Age*.)

The official account of our worst days in the Antarctic, says: "On the 24th we experienced a very heavy gale from the S.E., accompanied with its usual thick weather and heavy snow squalls. The barometer gave no indication of the coming storm, except by its unusual height; it fell rapidly as the wind freshened. As we were surrounded by icebergs, and could seldom see for more than 100 yards distance, it was rather an anxious time. I got up all steam, and prepared everything for making a stern-board. The ship was hove to under storm sails. At 2.45 p.m., in the thickest part of a squall, wind force 10, we saw the loom of a large iceberg on the lee bow as we were drifting immediately upon it, and there was no room to steam ahead. I went full speed astern, took in the fore-trysail, and set the weather after clew of the reefed maintopsail aback, the yards having been previously laid. Fortunately the ship under this sail gathered stern way, keeping fairly broadside to the wind until we had

drifted clear of the iceberg; wishing to use it as a breakwater, an attempt was then made to steam up under its lee, but with close-reefed after sails and full speed the wind proved too strong to allow the ship to face it. After drifting half a mile from the berg another large one was seen during a clearance of the squall half a mile ahead. I accordingly allowed the ship to drift towards it, and shortly after passing to leeward, the wind lulling a little enabled us to get the ship's head round, and by the assistance of steam and sails to retrace our steps. Having proved the road to be clear of dangers, we spent the anxious night going backwards and forwards between the two icebergs."

And of the gale on the 26th: "During the afternoon the wind freshened from the north, and by 8 P.M. it was blowing a strong gale, with a heavy fall of wet snow hiding everything from our sight more than one-eighth of a mile distant. Fortunately just before dark a large iceberg was seen which enabled me to heave the ship to to leeward of it, under a close-reefed spanker with full steam up. The gale never blew too hard to prevent the ship steaming very slowly head to wind, but had we drifted away from under the lee of the friendly breakwater the heavy sea would have prevented her doing so. It was fortunate that this gale shifted to the westward instead of to the southward, as the former one did, otherwise, commencing as it did with a heavy fall of wet snow, there would not have been a serviceable block or rope in the rigging with the upper deck covered with ice.

"After experiencing two heavy gales whilst surrounded by icebergs we can readily realise the great dangers which a sailing vessel must encounter in navigating these seas."

On the 11th: "The same night we passed a great number (of icebergs), and during a fog, with a light breeze, ran into the edge of the open ice in lat. $65^{\circ} 30' S.$; luckily the ship answered her helm before her way was completely stopped, and feeling the wind more as it came abeam soon bore her way out into the open water again."

On the 16th:—"As we ran to the northward, with a falling barometer, the number of icebergs in sight quickly decreased, which was fortunate, as by midnight the weather was very misty, with heavy squalls from the S.E., accompanied by thick snow. The ship was hove to under treble-reefed topsails."

"Whilst south of 60° south latitude we were obliged to heave to every night on account of the darkness; it so happened that there was no moon above the horizon during this period."

Hardly halcyon seas in Antarctic regions, you see!

CHAPTER III.

MELBOURNE TO CAPE YORK.

THERE was joy among us on arriving at Melbourne. Of gales, snow, icebergs, and discomfort generally, we had had enough, and the memory of a dinner I ate at the club the first evening, followed by the opera, yet lingers in my memory as one of the pleasantest experiences of a poorly paid and laborious career! And yet that Southern cruise was well worth the discomfort; the islands were delightful, the weather was, on the whole, very fine, while there are few people now alive who have seen such superb Antarctic iceberg scenery as we have.

One afternoon particularly is in my mind's eye at this moment. We are steaming towards the supposed position of land, only some thirty miles distant, over a glass-like sea, unruffled by breath of wind; past great masses of ice, grouped so close together in some cases as to form an unbroken wall of cliff several miles in length. Then, as we pass within a few hundred yards the chain breaks up into two or three separate bergs, and one sees—and beautifully from the masthead—the blue sea and distant horizon between perpendicular walls of glistening alabaster white, against which the long swell dashes, rearing up in great blue-green heaps, falling back in a torrent of rainbow-flashing spray, or goes roaring into the azure caverns, followed immediately by a thundering *thud*, as the compressed air within buffets it back again in a torrent of seething white foam. We are all on deck, looking out for

the American's land, about which we are now getting extremely sceptical. At six o'clock the pack-ice is sighted ahead, stretching away to right and left, and to the South Pole, too, as far as we can see or know. Aft us the sun — at his setting—is glowing out from among light golden clouds, the only ones in an almost cloudless sky—bathing sea and ice, both bergs and pack, and ship, all in a flood of soft yellow light. Ahead of the ship the pack is sparkling and shimmering, the sky pale blue, cold, and clear, revealing beneath it as far as the mast-head look-out can see, pack-ice and icebergs—a world of ice, but still no sign of land. So *then* we gave up "Termination Land" as being an optical delusion.

The ship stayed at Melbourne two weeks; M. and I stayed another week, and rejoined the ship at Sydney. Melbourne I liked very much; its demerits to a sailor being a disagreeable anchorage, a heavy swell setting into the bay—a veritable inland sea—on the slightest provocation, and, also, that the town of Melbourne was distant a quarter of an hour by rail from where we landed. It would be a fine town anywhere; but looking at its youth—only thirty-five years old—one may call it a very fine town, made so by broad streets, fine public buildings, banks, churches, &c. In the town, or adjoining it, are pretty, though stiffly laid-out gardens and parks: while suburbs, largely composed of villas, stretch away to the south and east for a long distance, made accessible by constantly running trains.

The town is built in Yankee plan, rigidly right-angular; along both sides of those streets which look one way, streams of running water flow beside the kerbs; these, in rainy weather, become raging turbid torrents, so much so that horses drawing cabs—hansoms and otherwise—frequently refuse to cross them where they run past cross streets. In former days, before little iron bridges were put up, "another child drowned" used to be a common occurrence; and while we were there we read in the

morning paper about a woman who, tumbling in, was swept under a bridge, and there was drowned before she could be rescued! They give a peculiar and pleasant look to the streets (not the drowned people, but the streams), and cool the air in hot weather.

There is a most admirable club, the best out of England that I know, having the advantage of a great number of bedrooms, which honorary members can make use of—a civilized institution for strangers in the land, unknown, I'm afraid, but necessarily so, in our clubs at home. We lived at this club for more than a week, and, excepting to go in and see what they were like, we had no need to enter a hotel the whole time. The members are a pleasant, hospitable set of men, the mere fact that we were R.N.'s being sufficient to ensure us invitations up country from squatters. Men-of-war do not often come here, so when they do the Melbournites show their appreciation in all kinds of welcome ways, present us with free railway passes, the Mayor receives us in the Town Hall, the members of the club give us a dinner, and great numbers of people come on board.

I met our Argyllshire neighbours, who invited us to go and see their property inland, so away we went, and here follows a brief account of our cruise:—Two hours by evening train brought us to Geelong, a town built on the shores of a small inner bay, and which once thought it was going to be what Melbourne has become; so to take away from Melbourne at one fell swoop its trade, (Geelong built thereto a railway. But, alas for Geelong! 'twas all the other way, for the trade departed from Geelong by Geelong's own paid-for railway! So Geelong is rather a "mean" town still, has tweed manufactories, and ships a little wool; Melbourne papers occasionally and sarcastically informing one that "there is life in Geelong yet," *à propos* of a new something or other. But a "high tea" at a good hotel caused us to bless Geelong, and we bear it heartfelt sympathy.

At 10 P.M. we got into a coach—of omnibus form inside—with one other passenger, and a cargo of mail-bags on which we lay and slept. Four horses, fast going, capital road, lovely but chilly night, chequered oblivion, altering pillows, mail-bags very hard and angular, savage thoughts as to whether people in Australia ever wrote soft letters, attempts to get some (if so) under me, hoping M. was not more comfortable than I was, passenger vanished, and frequent change of horses, is all I can vaguely remember, till a hot sun and bright blue sky awoke me to find the coach rumbling and slashing at a gallop through yellow grassed flat country, sprinkled with gum-trees, sheep, and cattle. Sunshine sparkling everywhere on dew-covered grass and foliage; loud flute-like bubblings from piebald "piping crows;" harsh screams from great flocks of snowy-plumaged, yellow-crested cockatoos; prolonged sarcastic haa, haa, haa's from "laughing jackasses;" and soon we gallop into a neat little wooden village, draw up at an inn, wash, breakfast, smoke, and feel generally very much alive and ready to enjoy life.

Here also we find F.'s buggy, which takes us on. We presently leave the high road, passing first a salt lake among low hills, ninety miles from the sea, and strike off on to a grass "bush" road. These bush roads, from two to four chains wide, go straight as an arrow all over the country, through anybody's property, "anybody" having to fence them off. They are the public highways for vast herds of sheep and cattle travelling to market.

During the first hour's drive, every mile is a repetition of the last, perfectly flat country fenced off into immense fields called paddocks, long coarse-looking grass, and dead gum-trees—bleached and white—the ugly and prevailing features. Endless lines of post-and-rail fences, an occasional sheep only in the paddocks, though many thousands are probably close by somewhere, and in short, the landscape wants, what indeed we had, a brilliant sun and bluest of skies to make it cheerful. We saw a few

kangaroos, which, startled by us, went jump, jumping away with tail in air and prodigious bounds over prostrate trees and post-and-rails. Their stern-heavy, light-headed appearance, tail high in air, and the easy length of leap when on the move, is what one cannot imagine, having only seen them leading a cramped-up life in the "Zoo."

As we drive on, the boundless paddocks become rich fields of grass and clover, on which large "mobs" of cattle and sheep are browsing; then the fields become an almost English-looking park, short green grass, fine gum-trees, and not far off, on the crest of a hillock, we are pointed out a cottage backed by trees and shrubbery. Very pretty indeed, and so, past the "home station" and stables, we drove up to the door, where we are welcomed by F. A charming little bungalow, with outhouses in rear, the shrubbery and trees full of long-tailed parroquets, while in front, a grass bank dips into a field, wherein are a number of splendid stud sheep; beyond again are more fields, all lightly sprinkled with gum-trees. No rough bush-life here, that's evident!

The weather during our two days' stay was perfect and delicious.

Having an insane desire to shoot a kangaroo, we went after them that day. We commenced by lying down in a field and eating luncheon, and then walked about some low hills—old craters—a mile behind the house. We soon saw kangaroos, their heads peering at us above high ferns and grass. Long shots proving futile, excepting to make them and others go bounding away up hill in their very peculiar and mad-looking manner, we altered our tactics, and sent the keeper—a Scotch one—round the other side of the hills, while we posted ourselves in divers judicious spots. And soon back they all came, a jumping mob of over fifty kangaroos, both large and small. We all shot one or two, and I could have shot more if I had so chosen, as they came quite close to me. The proper thing to do is to hunt them with dogs, which requires good riding; they

say it is great fun, but I had no chance of trying. We left all our kangaroos on the ground where they fell, merely cutting off their tails, which made tolerable soup, and are the only edible portion of the whole animal. Squatters regard kangaroos as an unmitigated nuisance, for they nibble at all the best pasture.

We made most admirable shooting afterwards at cockatoos and "laughing jackasses" with a small Henry rifle—the most deadly I ever shot with—at two hundred yards. I must tell you, that after I had shot that object of my ambition—a kangaroo—I felt no sort of exultation; on the contrary, I thought the proceeding a mean and unsatisfactory act.

The next day we walked and drove about, shot with rifles black swans and black geese, watched fat cattle being selected out of large herds for the market by men on horseback, looked over the sheep-shearing and washing houses, saw great flocks of white cockatoos in the fields, and in the evening dined on the fat of the land, drank of F.'s excellent cellar, and thought it all a most charming life.

This property is 14,000 acres of freehold land, stocked with sheep and cattle; they have another property in another direction, but it is not nearly so rich as this one, and they have just bought a "run" of 100 square miles in Queensland—a nice little block!

On the third day we returned to Melbourne, this time in a cramped-up-with-people coach. During this drive we saw something of manhood suffrage, something which made us long for the day when the radicals at home may have their own way! Every man, you must know, out here is vastly superior to every other man. A newly-elected member of Parliament, a pleasant-looking man of, one would say, the middle class (only there is no middle class out here!) was hoisted on to the top of the coach amid the cheers of his electors—a doubtless most respectable, but also somewhat of a ruffian-looking crowd,

composed of, one would say, the lower classes (only there are no lower classes out here!). One bottle-nosed (it was also flushed) individual, much to the danger of the M.P. whom he had assisted to hoist on the coach, now with hands in pockets, and his face wearing a smile of ineffable, weakly joy, looked up, his head tremulous with admiration and brandy, and said, "*There* you are, old son!" A little further on a drunken publican, with dishevelled hair and doubtful pronunciation, rushed out, shook hands, and wished to know if "Old shunn, do ye shee daylightsh yetsh?" The new M.P. was very civil, but evidently did not like it much.

We noticed, too, a little Australian scene here and there; now it was a nurse wheeling a baby in a perambulator; they cross a wooden bridge over a deep side-gutter; the perambulator capsizes right over; out flies the baby, and tumbles all limply into the dry gutter bed; nursery maid picks it up, and proceeds quietly onward as if nothing of an extraordinary character had occurred; and now it was a boxful of oil-paints which they carelessly let fall from the coach roof, the oils of different colours flowing on the ground indiscriminately. Everybody laughs, ladle up what they can of the paint, and pour it all into *one* pot, during which operation appears the consignee,—horror, despair, curses!

The heat was very great, whirlwinds of small flies drifting over the country, and we were very glad when in the evening we drove into Geelong.

M.P.'s out here get paid for their services, about £300 a year. Many of them are, I am told, mere agents in the house for cliques of electors, and a five or ten-pound note from some grateful individual, for whom his agent in the house has asked a question, is often accepted. During our stay, an M.P. in a public speech denied accusations of having received bribes, and added that he had *only* received turkeys—in number I think thirty! They have fine houses of parliament, the chambers within looking

small, but they tell you that their room is two inches bigger in every direction than the House of Commons at home. This statement you bow to.

We had another cruise, up to Sandhurst—the biggest gold place now going on. Four hours by rail from Melbourne. At Sandhurst, unlike at Ballarat, *the* original gold place, where the working is alluvial, the gold is found in "reefs" of quartz. The quartz veins are followed, blasted, picked, hoisted to the top, and there smashed into powder, the gold being extracted by the quicksilver process. The mines are counted by hundreds, and down one of the deepest we went. First putting on canvas "overalls," and disreputable dirty hats, we descended on an open tray. Arrived at the bottom, we wandered along bewildering and endless underground galleries, each of us holding a candle, saw the miners pickaxing and blasting, saw large specks of gold in the quartz, talked to the miners—a civil, pleasant lot of fellows; admired the fresh air and comparative cleanliness of the working—so different from a coal mine; and then we came up, stopping at two other levels, where we underwent the same thing again, very glad we had seen it all, and very glad it was over.

Then we were shown through a crushing-machine house, where everything was explained to us, where ceaseless unrelenting steam-hammers powdered quartz and nearly deafened us for life. Like the Yankee machines where howling pigs go in at one end, and come out at the other sausages, so does the quartz go in at one end and come out at the other gold—which is all the explanation I can give you at present of the process.

The town of Sandhurst is meagre enough, one or two good streets, good shops, a fair hotel, but we were glad, very glad to get away. "How do? so glad to see you!" said a young fellow to me at the hotel. I informed him that I had not the honour of his acquaintance. "Why, is not your name Jones?" "No, it isn't," said I. "Exactly like Jones, I've been watching him for ten minutes," I

heard this wretch tell his friend, and I went—went with no wish to see Sandhurst again.

People were coming from the country into town for the Easter holidays, and in our carriage were two school-mistresses, good-looking girls, and for three out of the four hours one of them sang, in duet, with a man friend of hers. Fancy people doing that in a full first-class carriage at home!

A propos of the inferior sex in these lands, the young ladies are not quite English, nor are they at all American, and I think they are more like Canadians than anybody else. They are not the least shy, not one bit, perhaps from an English point of (distorted) view not quite enough, but here they have a semi-English etiquette, more so than in Canada by a long way, and distancing America out of sight. Etiquette in a country where everybody pretends to observe it is all very well, and it is not till one has sojourned in Canada and America where everybody more or less disregards it, that one fully appreciates what an abomination English stiffness and etiquette are.

A deliciously naïve, pretty young lady, asking us about kilts in Scotland, was told that they were much worn, and that some Highland regiments always wore them. "Yes, do-o-o they? but," hesitatingly, "a-a-a not in daylight?" She could not believe this savage costume was allowed to be worn in the broad light of day!

We went one day to see the "chief secretary" at his country house, where he has a large vineyard, and makes excellent wine. We had a pleasant day walking about the country, and slept at his house that night. Mr. F. is at present engaged in altering the Upper House to the Norwegian system, so the members of that House dislike him, but he has his own House and the country at his back. The democratic element in Victoria is very strong, and has things all its own way, protectionist policy, discouragement of immigration, &c. Club men, squatters, bankers, and lawyers bewail to you by the hour the legis-

lation of their country; M.P.'s also bewail, and one who was bewailing to me was roundly brought up by an outsider for talking about abuses when in the Club, and being always silent when in the House. "Why don't you go in for Parliament?" said a dry old stick of an M.P. to F.: "if you did nothing else, you'd *look* like a gentleman!"

We had intended going to Sydney overland, but everybody advised us not, so eventually we went round by steamer. We should have had to coach for 7 miles, travelling night and day, and one night in a coach—though empty—we have already found to be more than enough. In the meantime we stayed at the Club, lazy but happy. There was plenty to be seen and done, a fairly good opera in a fine opera house, and a good theatrical company in a fine theatre, with a notably good and very pretty actress. And there were "our Institutions" to see: a small university, good museum, splendid free library, where anybody, happily not drunk, may go and read any book they please; a famous lunatic asylum with a shocking number of maniacs therein—the result of gold fevers, excitement, and dissipation; a fine mint, banks with rooms full of bar gold, &c. The authorities go in a great deal for instructing the masses in Victoria, have casts of all the famous statues, a good picture gallery, &c. Venus and other goddesses are placed in the public gardens, "to accustom young people not to blush," as I heard some one say. They are building a fine Government House, consisting principally of a ball-room with rooms attached, but how the Governor is to keep it up without a much larger salary than he has at present Melbournites cannot tell me.

There was a dreadful newspaper reporter who threatened to describe my exact appearance in the newspapers, so that when I perambulated the town all the world might recognise me! However, he had mercy and forbore, and I went my ways in peace. I must add, that

I do not call the wish of this man an Australianism. He must, I think, have escaped from America.

From Melbourne the ship went to Sydney, in whose delightful harbour she remained from April the 6th till June the 8th.

We have "done" New Zealand, and that miserably! Sixteen days from Sydney to Wellington, four days being occupied in trying to get through "Cook's Straits," which divides the "North" from the "Middle" Island, against a head gale of wind, which obliged us to run into two out-of-the-way and desolate anchorages for protection; deep fjords between high steep hills, covered with bush, and above them a far-away background of snow-capped mountains. While threshing along one day under steam and fore and aft sail, beating up against the gale for harbour, a "leadsman" was washed overboard, and never seen again.

Nowhere is there a more abominable stretch of ocean as this 1,100 miles between Sydney and New Zealand. For the first few days we had nothing but gales and bad weather, which did not prevent us, however, taking a line of soundings for the future cable, which, when laid, will be the deepest extant, 2,650 fms. at one place.

At Wellington we found the Governor staying, so instead of remaining only a couple of days, and then going on to Auckland, we stayed the whole prescribed New Zealand time there, where there was nothing to be seen and less to be done. A small wooden town of 12,000 inhabitants built facing the large land-locked bay, at the foot, and up the slopes of steep green hills, sparsely covered with dejected, wind-blown trees. A railway runs along the shore to an agricultural valley called the "Hutt," at the head of the bay, which is the road to immense pastoral districts inland, Earthquakes necessitate building the houses of wood, slight shocks frightening Wellington occasionally; one, in particular, twenty-six years ago, partially shook the town down, thereby causing panic. Handsome Parliament

buildings, the "Government House," and a cathedral are conspicuous objects in the town.

Parliament opened while we were there, thus giving us an opportunity of seeing New Zealand's collected wisdom, including four Maori chiefs, who are M.P.'s, tattooed, cannot speak English, and are dressed, of course, in European costume; an interpreter explains to them what is going on in the House. We "assisted" at two dances (thus giving us, you will say, an opportunity of seeing Wellington's collected folly) and both were very pleasant, and people generally were, as everywhere in the Antipodes, endlessly hospitable and kind.

As I cannot tell you from personal experience anything about New Zealand I shall "pipe down."

Of course you are asked on all sides how you like New Zealand, to which remark you can only reply that you think their climate perfect—as a matter of fact, it rained and blew almost the whole time we were at Wellington—and that you have only seen Wellington; still you doubt not (knowing what's coming) that their mountains are grander, their scenery more beautiful, their beef and mutton very much cheaper, their ideas more advanced, and their fruit far better than anything in the old country; and finally, that you are astounded at the high state of Englishism in which you find them. Nothing exasperates, and very justly, people out here so much as the ignorance displayed by travelling Englishmen, and by people at home of everything Antipodean; but this ignorance the youth of Australia, anyway, return with interest. We were asked if there was more than one good harbour in England? if London was dull when the fleet left? &c. Wellington is, they say, one of the "meanest" of New Zealand towns, and is the capital not on account of size or population, but because it occupies a central position in the large colonial territory.

We left on the 7th, and steered for Tongatabu in the Friendly Islands.

A couple of days after leaving we passed enormous shoals of "pyrosoma," which at night appeared as thousands of great lamps sunk close together beneath the water, above which floated a bank of subdued yellow light, through which we quietly steamed on a calm unruffled sea. It was with one exception (and that was of a different character), the finest effect of phosphorescence I ever saw. Shoal succeeded shoal, and when in our course we did not happen to steer over them exactly, then we altered course a little, and glided into the light-bank which came flooding out from the illuminated sea with well-defined boundaries against the dark night sky, while the pyrosoma, surrounded by a light yellow halo, slid past our sides in a stream.

We got some capital hauls with the trawl, particularly between a group of islands called the "Kermadec," when crinoids—shy and rare birds to catch—came up in profusion from a depth of 520 fms.; also some fine siliceous sponges, fishes, &c. One sponge was almost a solid cube of some eighteen inches, a pink mesh of delicately-woven glass-like fibre. Among these islands we saw the last of our old friends, the albatross, Cape-pigeons, and other petrels, which have been our companions for the last nine months. The islands are uninhabited, though not long ago an American family lived on one of them, but we heard from whaling ships at Tonga that they had been frightened away by an earthquake, which, they say, has thrown up a new island a little to the southward of the group.

On the morning of July the 19th we sighted the island of Eooa, a small high island nine miles from Tongatabu, which presently appeared in a low, uniform line of dense vegetation; among which, along the shore, we now and then saw the brown huts of the natives. This island is perfectly flat, semi-circular in form, and from its concave side great coral reefs stretch away for a long distance, low bush and tree-clad islets cropping up here and there, the largest being inhabited. Threading our way by a narrow

passage through the reefs, easy enough for a steamer, we dropped anchor opposite the royal village of Nukualofa.

Two boats had previously come alongside, one with a pilot, who judiciously came not on board till the only danger was passed. Both boats were manned by five lusty Tongans, magnificent fellows, a short kilt of native cloth—"tappa"—or the long leaves of the pandanus palm, their only covering, showing to full advantage their muscular and well-proportioned frames. Their clear, light copper-brown coloured skins, yellow and curly hair, good-humoured, handsome faces, their *tout ensemble*, formed a novel and splendid picture of the *genus homo*; and as far as physique and appearance goes they gave one certainly an immediate impression of being a superior race to ours. There are no people in the world who strike one at first sight so much as these Friendly Islanders.

The view from the anchorage is of a flat coral beach covered at high tide, and a strip of sand below a grassy bank, from which spring the white stems and waving plumes of a coco-palm grove, extending away to right and left, and mingling with trees and bush as it recedes from the village. The palm-grove is broken and thinned opposite the landing-place by a hillock, the highest point of the island, once capped by a stockade, but now by a large Wesleyan church. Below this prominent church, on the left, comes the king's palace, then a few cottages, from one of which floats the Tongan flag, red, with a white cross in the corner. Behind these, and on both sides of the hillock, the native huts lie scattered among the palm trees, where white-kilted natives saunter about, or sit in groups on the grass above the shore; others wade on the half-flooded beach, catching fish and picking up shells, or paddle about on the water in narrow outrigger canoes, which crowd round the ship, laden with bananas, coco-nuts, yams, corals, pigs, poultry, &c.

On landing, by a passage cut out in the coral beach, we are on the "broom-road"—a broad grass road running

along the shore; in front of us is the palace, a wooden bungalow on a grass plot shaded by trees. At the back of this we come to another road terminating on the right by the church on the hill top, and on the left the eye follows a long vista of grass road running between huts, cocos, and bread-fruit trees. On a grass-lawn behind the church, planted with palms, bread-fruit, hybiscus bushes ablaze with crimson flowers, oleanders, and trees, some bearing great yellow blossoms, and others white, are built the missionary cottages and a large school-house; and beyond, in an open glade, two rows of particularly neat huts, the space between cultivated with pine-apples. In those huts live, we hear, the native teachers and pupils, and very nice their houses are, very plump and good-looking their wives, and very flourishing their babies.

The huts composing the rest of the village are scattered about in the coco-grove without any regularity; where they are thickest the green carpet is worn away, but among the more outlying there is grass under-foot, and always the rustling shade overhead of palms and bread-fruit growing among bananas, pandanus, and other trees. The huts are oval in shape, the boat-shaped roofs supported by stout posts, the walls made of reeds interlaced in patterns, the roofs thickly thatched with bundles of wild sugar-cane, on which, again, coco-branches are spread; and over the low door falls a mat, with which, too, the floors are carpeted. As cool and pretty love-in-a-cottage kind of dwelling as any love-sick swain could sigh for!

It was Sunday afternoon, and most of the natives were *chez eux*. From the huts, as we stroll among them, comes a new and bubbling language; and through the open doors we see men and women sprawling about on the mat-covered floors, smoking or sleeping, with their heads on pillows made of bamboo, cushionless, and one would think extremely hard. From some, as we pass, the mat screen is pushed aside, and grinning girls thrust out their yellow-haired heads and pretty faces to stare at the strangers.

"Salofa!" say we, and "Salofa" return they with a cheerful laugh. At others, papa, mamma, and a crowd of piccanninies are sitting; indeed these last, with pigs, dogs, and fowls, are, this quiet afternoon, the life of the village. The cooking goes on in the open air, or else under a roof of palm leaves, the diet consisting chiefly of yams.

We notice, and that without difficulty, that the elderly women and some of the men are immensely fat, and that the former soon lose that beauty which many of the girls have in a great degree. As a rule they are handsome, both men and women, tall, powerfully built, with proud and upright carriage, and swinging gait. The young people of both sexes are often very much alike, and a young couple whom we met to-day I shall always remember. They were wandering about in the coco-grove hand in hand, both very good-looking, both with light yellow curly hair, both slightly clad in native garments of tappa. An idyllic South Sea love-scene!

A waist garment of some fashion is universally worn, made of cloth or tappa, and more or less long; also a sleeveless short jacket or pinafore, which is supposed to reach to the first-mentioned garment. There is a fine of three dollars throughout the island for any woman who is seen outside her hut without this upper garment or an apology for it. In the village of Nukualofa, it being Royal and to-day being Sunday, this orthodox dress is worn; but elsewhere in the island, the law, from our own observation, appears to be very much unheeded. Inside their huts they seldom wear aught but the kilt.

Both sexes wear their hair in the same way, the women's perhaps a little longer than the men's, stained a red yellow, or a light yellow, or sometimes quite white, as if powdered. This stain they produce by washing it with lime, mixed with sandalwood, which, in different proportions gives the various tints, and the effect is, I think, charming. Picture to yourself—but you can't, "you gentlemen of England, who stay at home at ease," how

can you? but never mind—picture to yourself dark brown almond-shaped eyes, dark eyebrows, a flat South Sea Island nose ('tis like no other), large but well-formed lips, the ready laugh displaying rows of perfect teeth, a halo of curly yellow hair, all set on a graceful, straight, lithe figure, draped in a costume which shows it off to perfection. The dark eyebrows and lashes contrast well with the light-coloured curly hair, a handsome mixture of brown and blonde much aimed at, as we all know, in other countries, and universal here.

We met the congregation coming out of church in the afternoon, King George, of the Friendly Islands, heading the crowd. A fine-looking old fellow, dressed, as some of the natives were, in black tailcoat and white duck trousers. Many of the women, oh, horror! were dressed in the garments of Europe. Never had European dress appeared to me so out of place, or to such gross disadvantage. Beneath their hats—gaudy and vulgar to the last degree, as was the rest of the costume—fell loose black hair, thin, straggly, and dirty-looking; and their faces, I am thankful to say, were ugly—very! no pretty girl surely would dress like that. I am glad to believe that this style of dress is not encouraged by the missionaries.

The romance of the hair-dyeing is mixed up with the animal world, it being—don't be shocked—a preventive against vermin, the lime killing them if present, and preventing their getting there in the future. But this surely is better than seeing whole streets full of women and children at their doors—as I have seen over and over again, particularly in South America—all—but no, I forget myself, but everybody knows how monkeys employ their leisure hours, and 'tis all the same as that. We looked into the church, the congregation being present, and were not doubtful for a second of a sickly odour of coco-nut oil; but methought of a damp congregation at home, and I plumped in favour of the coco-nut oil. They rub their

bodies all over with this oil, the philosophy of which is connected with the sun and his effect on their skins.

Broad grass roads run through the island, coco-palms, bread-fruit, bananas, hybiscus trees, and others growing thickly everywhere above a dense undergrowth of scrub. Spots, where once the ground has been cleared, are now overrun with a purple convolvulus, a red-flowered wild ginger, and a white-flowered wild bean, and the mottled effect of these three spread over a large mass of low bush is extremely pretty. The convolvulus was creeping up palms and bananas, entwining the lower branches of trees, and smothering them with purple flower.

As we were going off in the evening, three strapping, laughing, chaffing handmaidens of the King and Queen came out of the palace bearing great platefuls of oranges and bananas. "The King," said they, "the King!" which presents from his Majesty we pocketed and took on board.

The next day some of us went to a lagoon after duck, which we saw, but they were too far off to shoot, so we roamed about, shooting small birds, the prettiest being little fruit-doves, green and yellow, with pink caps on their heads. It was very hot, but brown brats accompanied us, always ready to walk up a palm with monkey-like ease and throw down coco-nuts. We came to another village by the sea—a Roman Catholic mission—whose native-built chapel was a very modest affair compared with the Wesleyan Church of Nukualofa, while the two priests were living in equally modest huts.

We sent our band to play to the natives in the afternoon; we lounging about the King's palace and verandah, and the natives sitting round on the grass outside. The music was much appreciated by Royalty, including three princesses, grand-daughters of the King—fat, sonsie, good-looking lasses they were—also by the handmaidens aforementioned, the feet of one of them, a roguish little Fijian, commencing an involuntary twinkle, which was encored by us naval men, but at once put a stop to by her

august Majesty, who bundled them all out of the room. Extreme *embonpoint* is in the South Seas much admired, and the Queen ought certainly to be the admiration of all her subjects. She is a very good woman, and doubtless a dear old lady. We took photos of them both, she dressed in one of those dreadful hats and muslin garments of Europe.

The King is a fine tall fellow, though now rather old. An ardent missionary himself, he thereby gives the Wesleyan missionaries great influence over the natives, an influence which they have to a marvellous degree. The Roman Catholics have, of course, many converts, for, to the untutored mind of a South Sea Islander there must be a load of convenience in being able to obtain absolution, and also a bigger load of the same in not having to pay for their professed belief by contributions of palm-oil. The Wesleyan mission from this small island alone sent home 2,000*l.* last year ; let us hope it goes to convert the heathen there !

King George is autocrat ; when he chooses (once in three or four years) he calls an assembly of his chiefs. He is clever, has a dignified manner, and has "travelled," *i.e.* been to Sydney. King of all the Friendly Islands, consisting of three groups, he and his subjects are greatly respected by all Polynesia, chiefly they say on account of his personal character, and because his subjects were the first to embrace Christianity, which last so-called reason I don't know the meaning of. He has his judges, policemen, and 200 soldiers, one or two of whom are red-shirted, trousered, and, switch in hand, keep guard on occasions of ceremony over the palace. A German palm-oil trader told me that they got fair justice from these judges. All the land is owned by the King, but any man can get as much as he wants for so much rent ; there is a poll-tax of 7 dollars, and heavy fines for divers public and (what ought to be considered) private offences. He gets an income of something like 1,200*l.* a year, and pays his officers. He lives

well, drinks champagne, and is acquainted with most luxuries. His three sons are Governors of the three island groups.

We had a most pleasant cruise another day, half a dozen of us riding on horses lent by the King, or hired from natives, others driving in the missionary's pony-carriage. For twelve miles we rode over a perfectly flat country, on a good grass road; no cultivation visible excepting bananas—nothing but scrub, woods, and endless coco-palms. Beautiful butterflies fluttered in the air, white and grey egrets alighted on the road, blue kingfishers darted across our vision, and nut-brown girls laughed and "salofa'd" as we galloped along the turf road of this delightful South Sea Island. Everywhere the colouring of the foliage is resplendently green and fresh; we ride past dark clumps of casuarina, and of buttressed trees, dripping with trailers and convolvulus creepers; past small banana-plantations surrounded by bread-fruit and cocos; through low woods, and open bush of wild sugar-cane, ginger, bean, and pandanus palms.

Four miles from Nukualofa we came to the village of Bea, where on the ground, dismounted, lies a small English field-piece—a relic of a man-of-war's notion of compulsory Christianity. Close by are the remains of an old stockade surrounded by a ditch, both now overgrown with scrub. This stockade, in the year '40, a captain of an English man-of-war attacked with a body of seamen and marines, he with a sword in one hand, and a Bible in the other! The village resisted the present King (he is King by conquest only), and this captain set out to subdue it, incited by Christian missionaries. Leading the attack, he, at the entrance of the stockade, received a bullet in his body and a bayonet in his arm, and retiring, was killed by another bullet. Several men were killed, the guns captured, and Her Majesty's forces beat a retreat; the King with his own men afterwards subduing the place by starvation. Captain ——— lies buried on the hill at Nukualofa; the gun remains,

after thirty years, where it was tumbled off its carriage and peace reigns supreme where this illegal crusade was made against the heathen in the name of Christianity. Here, too, overshadowed by iron-wood trees, are the graves of two missionaries, massacred by the natives. There is an old Jesuit priest still living on the island, who, it is said, was encouraging the natives in the Bea stockade during the attack; if he was, he was certainly doing a justifiable action.

I was much charmed with this small village of Bea, because, while waiting for the photographer to arrive, for whom I had a message, I dismounted at a young woman's invitation, and went into her house, where soon a dozen more joined us. We all sat down on the mats. I handed cigars round, we smoked, laughed, chaffed, and talked in an unknown tongue, and were as merry as possible. They were much taken with my eyeglass; a few were very pretty, real sonsie lassies, with round good-humoured faces, very light-coloured, fresh-dyed yellow frizzy hair, and all tremendously fond of what they call, and incessantly ask for, "schmoke." I cannot say they were much dressed, wearing only short kilts of tappa, but perfectly nice in demeanour, and bursting with incessant laughter. One beloved little girl, about five years old, her hair black, thick and wavy, floating about her shoulders, thus different from the others who cut and dye it, fell much in love with me, and when I came back I found she had beautified her pretty little face with a streak or two of ultramarine. I did not admire the addition, but as I flattered myself it was done in my honour, I gave her a cigar, which was nobbled at once by her hitherto invisible papa. These people, papas and brothers, appear in the villages in the evenings, having been asleep, or at work with coco-nuts, yams, or taro during the day. The girls here were spreading great pieces of tappa in the sun to dry, and only one or two were in legal costume.

A couple of miles further on we arrived at another

village, where from every hut came the clattering sound of tappa-making. This native cloth is made from the bark of a species of mulberry, first soaked thoroughly in water, and then hammered out to the required thickness; and so thin can they make tappa that it has the appearance of tissue paper, light as a feather, quite waterproof, and somewhat transparent. In every village one hears this hollow-sounding tapping going on, a busy and pleasant sound enough when not close to it. The bark is laid on a long board, and then beaten with a square-shaped bit of wood, with roughened surfaces. At the same board, sitting on either side, are occasionally seen over a dozen women and girls all hammering away, keeping a sort of musical time. A charming sight, if rather a painful noise. It is for them a fine occupation. They can make rolls of tappa of any length, joining the separate pieces by a mucilage obtained from arrowroot. The King once had a piece two miles long, and how many broad I am not sure. Possibly this length of tappa was meant for the Queen, but even she could not consume all that quantity. A pattern is stamped on it from cut-out leaves, on which is a black, red, or yellow stain.

An odd way they have of beckoning to one, a way which in other countries would mean "go away," and not "come here." Strolling about a village and seeing many women in many huts waving to you apparently to be off, you do not feel a welcome guest until you find out your mistake, and how glad they are to see you and shake hands, and of course ask for "smoke."

Going on a few miles we came to the head of the lagoon, and there we luncheoned under the shade of a gigantic and famous old tree, entwined round and round by a great snaky parasite, palms and foliage around, the sea rippling against the rocks at our feet, a canoe, swinging lazily, tied to the shore, and a few huts close by, whose cheery inhabitants sit near us, chattering and staring. From out one hut, as we rode up, there darted wildly a handsome

girl, with long yellow hair, and *such* dark brown eyes and eyebrows! Wearing nothing but the shortest of kilts, she stood by us chaffing, grinning, and offering help while we dismounted and tied our horses to the branches of trees. The missionary was with us, and he said some quiet word to her, and away she bounded laughing into her hut, and returned with a bit of cloth thrown over her shoulders.

Delightful! everything! tongues potted in Australia, beer bottled in England, and sherry in Spain, cigars from Brazil, cool breezes from the sea, a cushion of grass, and abundant shade, what more could we want? At the suggestion of the missionary this impulsive, tawny-hued girl went into her hut to cook eggs: we followed; she wrapped the eggs up in a green banana leaf, then put them on the red wood-ashes, and soon, oh! how good they were under that palm-leaved roof! In return we gave her a glass of "Englis kava," *i.e.* sherry, which was hysterically appreciated.

Then on we rode a couple of miles, through a thin wood of tall trees, till we came to the village of Mua, where both the Roman Catholics and Wesleyans have missions. But this village is the Roman Catholic head-quarters, and gathers to its religion the majority of the villagers. And here they have the most charmingly unorthodox chapel imaginable, "the largest and best house in Tonga," as they proudly tell us, built by natives in the native style, *sans clous, pas un seul petit clou*, as the old priest kept on assuring us. All the fastenings—of light beams, posts, and rafters—are tied and plaited over with sennit, made from coco-nut and other fibre, in pretty patterns, stained different colours; the wooden floor is polished brown by naked feet; there is a neat altar, and round the walls pictures representing the "nine Stations,"—all, excepting the last, worked as a labour of love by the natives. Such is the difference between this church and the Wesleyans', who, because they were brought up to worship in a parti-

cular European conventional style of building, therefore must have the same in these South Sea Islands, so *their* church at Nukualofa is hideous, and cost £600. The one is charming, suiting the climate, the scenery, and the natives, while the other does none of these at all.

And what a pretty and peaceful scene was this Roman Catholic mission! The large chapel and adjoining neat Tongan house, where dwell the priests, backed closely by a curtain of foliage; in front, and to right and left, a large stretch of greensward, planted with cocos and breadfruit, throwing ever-changing light and shadow beneath; the two grey-haired, bare-headed, black-stoled old priests, looking so intensely French and polite; lining the fence, and following us as we walk through the church and grounds, a following of boys, and girls dressed so *comme-il-faut* (having regard to the fact that they are nut-brown maids, and that 'tis hot); outside, the more staid and elderly people sit grouped round our horses; while beyond lay the scattered huts of the village, teeming with half-nude natives, the men lolling on the ground, the women cooking, and the children skylarking happily.

We rode on a mile or so further to see some ancient tombs of chiefs—great swells in their heathen days:—two oblong tiers of great coral-rock slabs, one above the other, overrun and almost hidden by great roots of trees which overhang the tombs. And then we rode back, some of us lunching on the way with the Wesleyan missionary at Mua. We have had a delightful day; the scenery monotonously pretty, coco-palms everywhere, no very thick woods, the country generally looking very open, but everywhere covered with wild vegetation, which, if you leave the road you will find anything but open, so dense is the low undergrowth of ferns, creepers, wild sugar-cane and scrub. The roads are marvels of excellence, all grassed merely marked in brown tracks by the feet of natives and horses, but they say that in the rainy season most of the roads are knee-deep in mud.

The coco-palms being the most paying cultivation, every man plants them on his land, often in avenues along the road, the young palm-branches brushing one's face in riding past. There is a considerable trade in coco-nuts. The native part of the industry (if anything so lazy as it is may be called by that word) is to plant the trees, break the nuts into pieces, and dry the kernel in the sun; and then they sell it to the merchants, who send it to Hamburg in bulk, where the kernel is made into oil, and the fibres of the husk into the well-known mats; the oil is much used for machinery.

Very few Europeans reside in the island; one of them keeps a store and sells those hideous hats and garments to the women. Another merchant I met riding back to-day; he buys coco-nuts from the natives, and from him I got much information about the islanders and missionaries, and so heard both sides of missionary and other questions. He told me, for instance, that the missionaries were "demoralizing the natives," and to my question "How?" and my insinuation that he was talking bosh, he replied, "They go in too much for trade." Of course, being a trader by profession, he did not like the value of what he bought being raised by missionary rivalry. He was indignant, too, that the King and missionaries discouraged the natives from wearing European-made cloth, and encouraged them in the wearing and making of tappa. And in this, I said, no one would sympathize with him.

We found that cheeky, roguish-eyed little Fijian hand-maid playing a flute through her nose, closing one nostril with her thumb, while the other was applied to the flute, with her fingers distended along the notes—a position reminding one of the mode in which, according to *Punch*, the Japanese ambassadors described the respectful salutes of the London street boys. There was a happy twinkle in her eye which found further expression in the tune she played.

'Twas like coming to a new world, this island of Tonga, but it is a dismal thought that the charming race who inhabit it are, as everywhere in the South Seas where civilization has set in, dying out fast. The question Why? is hard to answer, but in these Friendly Islands it is certainly not caused by white traders or anything they bring with them.

From Tonga—charming Tonga—westward we sailed to the Fijis, the second morning finding us close up to Matuku, a small outlying island of the great Fiji group. Black pinnacles, jutting up from woods and yellow grass which cover the furrowed slopes, form the summits of high hills rising steeply from the sea. Mangrove, coral-sand, and groves of cocos fringe the shores, surrounding which, separated by a band of deep water, a broad white ring of heavy breakers foams along the "barrier reef."

Being so close to the island, the captain thought we might as well land, so while the ship remained outside the reef dredging, we paid an impromptu visit to the shore. At once the difference between this Fijian island and Tongatabu is in everything visible, and this difference became more palpable as we got west; villages dirty and no more carpeted with grass, the huts built on a foundation of large stones—indicating much rain and mud—and not so neatly built; the natives a darker colour, their hair becoming more woolly, mouth and nose no longer Tongan, physique not so fine, nor countenances so prepossessing. The paths, just worn by naked feet in single-file tracks, slippery and dirty, now up, now down, led over ridges and across hollows, through high reed grass and belts of buttressed trees or scrub. The natives appeared shy, and we saw very few women, though amongst those we did see were one or two nice-looking girls. These islanders have been Christianized a long time, and have, we suppose, native teachers among them.

All these "Windward" Islands of the group have communication with Tonga, and when one sees a lighter-

coloured and pleasanter-featured man or woman, they have probably Tongan blood in their veins.

We came to two small villages, one surrounded with a light fence which might prevent a pig—if ejected—from entering again, but nothing else. These pigs, great and small, roam in and about the huts in numbers, and their odours are the decidedly prevailing odours of the village, and are, as we all know, not pleasant. Cocos, plantains, bread-fruit, pandanus palms, and buttressed trees are, as usual, the most obvious vegetation; the former growing on the lower slopes and round the villages, and the latter in belts and patches on the hill-sides, contrasting darkly with the stretches of yellow grass.

Delicious little lories—gems of their kind—fly “shrilling” in flocks among these trees, and ’twould make you scream with excitement to look up and see sitting on a branch, side by side, rows of little birds with crimson breasts, yellow claws, and blunt chattering bills just above you. Their backs, wings, and tails are coloured bright green, a necklace of blue secures an emerald on the back of the neck, and on their heads are black skull-caps. They were by far the prettiest sight in Matuku, which we left to go on board again about four o’clock, having had quite enough of that island.

The ship in the meantime had been successfully dredging off the reef in 300 fms., getting huge sea-urchins, and other things; also a *live* “pearly nautilus,” which, living, they say, has only been got once before. It was interesting to watch it in the tub of water, propelling itself backwards (apparently) by filling and then ejecting water from its—I have just inquired as to what I ought to say, and am told that the water by a tube goes into the “mantle,” and from there is ejected out by the “siphon,” so there!—make out of that satisfactory explanation what you can.

Then on we went to Kandavu, a large, and the southernmost, island of the Fiji group, possessing one of the

best harbours, used since March last as a port of call by the mail steamers running between San Francisco and Sydney, with a branch from here to New Zealand.

Beautiful scenery ; an open bay, its mouth partially closed by a wooded island, while to seaward great curling rollers, streaks of foam, and hazy mists of spray, tell where the coral reefs are calming the restless sea, which would otherwise—driven by the glorious trade-wind, which means *life* out here—come tumbling in, in an unpleasant manner. Grand hills, smothered with tropical verdure, rise abruptly from the shores, their spurs and ravines rounded and softened by this forest of intense vegetation, veiled morning and evening by pearly haze, dew-drops sparkling on every leaf, and palms flashing quick-silver-like in the sunshine and breeze. At the head of the bay—splashed brown and green with coral patches—these hills dwindle down into a flat narrow isthmus, a quarter of an hour's walk across, over which on a road, cut through the woods and paved with palm and banana-leaves, the natives haul their canoes from sea to sea. The hills again rise in more lowly form on the other side, over which one sees a more distant range.

But now come on shore and see how disappointed you'll be. We land, but as the boat cannot reach within twenty yards of the shore on account of the coral, we have to wade, or get carried on a native's back, and the unhappy thought flashes through one, how long will his smell of coco-nut oil stick to your clothes? Passing through the village, where are whiffs of pigs, skinny and hideous old women, and roughly built huts, we cross a stream with five men bathing in it, one of whom has a bow and fish-arrow, with which they shoot the fish. As at Matuku, the paths—mere tracks—wind across and up the steep slopes which rise at once from the level strip of ground on which the village is built. Scrambling across open spaces of tall grass, and then through a wood, we come to a lovely spot at the side of a gully, a clear stream gurgling along

its bouldery bed, and the banks thickly wooded with magnificent tree-ferns.

But the heat spoils it all. My ardour is soon damped—damped, ye powers!—it is pouring out of me till even my outer garments attest the fact, and I sit down, mop my heated face, vainly attempt to fix my blurred eyeglass, and vow—that I go no further. Sam, at my side, is panting like a high-pressure engine gone mad: that, and the stream bubbling below, alone break the heavy hot stillness. Sam stops, and I become aware of a distant humming, distant till a trumpet at my ear makes me start up with a shudder, and wildly slap my cheek, as a thing, a bobbing, dancing *thing*, as big as an average daddy-long-legs, spotted black and white, with jaws visibly prognathous, comes filliping about in the air before me. A mosquito!—I had not dreamt of them, and for an instant hesitated whether to fire at it or not; but finally we—Sam and I—retire rapidly, and strike up another path, the ground alive with lizards with steel-blue tails and bronze-coloured bodies. I meet somebody who has just shot a pretty little green-and-yellow dove, lose the path, get caught in a web of insinuating creepers, tear my clothes, bless tropical growths, turn back, and again soon lose myself, and flounder ankle deep in mud and water, irrigating a “taro” patch.

At length in the village again, I strolled among the huts—one or two of which are small dry-goods stores and the abodes of white loafers hanging on the mail-steamers—and held a desultory conversation with the only good-looking girl visible, carrying water from the stream in coco-nuts; but the majority of the inhabitants are not attractive; pigs are everywhere, one old sow being fed with unripe bananas from the hands of an old fellow squatting gravely on his heels before his dirty grunting pet.

All these Eastern people can sit literally on their heels, or, rather, on their calves, and this to them is the easiest resting posture to assume. A bevy of chiefs, who came

into our wardroom on board, sat thus, and would not take chairs. It is a fine power to have over one's joints, but it is necessary, as you will find, if you try, to be brought up to it from infancy. Another wonderful instance of this power is the way they *walk* up a coco-nut palm—absolutely like a monkey—using and touching the stem only with their hands and soles of the feet.

Strolling along the sandy beach, a small white boy, precocious beyond all belief, took me in charge, declaring he would show me a place for ducks. So, he babbling the most ridiculous wise talk about ships, guns, and birds, we arrived at a mangrove swamp not far from the village. There were no ducks, but suddenly, screaming past my astonished eyes, flew two gorgeous—I did not know what, till, settling on a tree close by, I saw they were—parrots, I had never seen such gorgeous birds before in a wild state, and not having known they were in these islands, was all the more delighted. Dark crimson breasts, green backs, wings, and broad fan-tails, and their length from head to tail about fifteen inches. A wretch brought back a number he had shot. One gets accustomed to this sort of thing, but still, a rumped heap of these birds, tricked out in what the natives call the "choice feathers of all others," shocks one a little. And soon I became sufficiently a barbarian to shoot the parrots purely to teach Sam to retrieve; and the effect was splendid as black Sam came rolling out of the jungle with these gaudy-feathered birds in his mouth. Sam has retrieved now during his life such different birds as penguins and parrots.

We shot also that pretty little creature, the "South Sea humming-bird," with long curved bill, dark velvety plumage, tinged with metallic green, and a spot of ruby lustre on the back of the neck. The natives caught for us an iguana, coloured light green with a very long tail; they also brought us small snakes, barred yellow and black which are fearlessly handled, though they have what appear to be poison-fangs.

The next time I went on shore, it was to the island, and this—*this* was a little paradise of luxuriant vegetation beautiful birds, and butterflies. The hills are low, and paths meander beneath vegetation, luxuriant as one could well see anywhere; and here I could enjoy it, because one did not necessarily melt with fervent heat. At the head of a narrow winding creek, densely fringed with mangrove, there is a small village which one comes upon from high surrounding banks, and stepping down, we are among the huts and cocos, in and up which a crowd of inquiring, half-frightened children bolt out of dog Sam's way; but soon reassured, they crowd round us, chattering, laughing, and staring with all their might. It was Sunday, and in a roomy church-hut were sitting a number of men and women, chiefly the latter, intoning in a sing-song manner, led by a native teacher, the New Testament translated into Fijian. Nearly all had these books, and we looked at some the children held which seemed much thumbed and read. Dogs were cruising about among the congregation, and appeared to be considered *en règle*. Pigs were inside the fence which surrounded about a dozen huts, these fences appearing to be built to keep the pigs within bounds, which are employed, I imagine, as scavengers. Several huts and many pigs were outside the fence as well.

We continued our walk, passing cultivated yam grounds of considerable size, and then plunged into lovely woods, guided by a pleasant, though rather supercilious young native, a son of the chief of the village and island, who took us by intricate paths to a little sandy beach, a place to dream of, and where I often afterwards came.

Crossing the village and bridged mangrove creek again, W. sat down on the grass-bank and sketched, surrounded by a wondering assemblage of boys and men, soon increased by women from the church. And there stepped into a canoe a vision of beauty, a young girl, evidently of some rank from her dress, wearing a white skirt reaching below the knee, and an upper sleeveless garment

to match. Seeing me looking that way, one of the natives pointed to her and said, "Missionar!" "Oh," say I, "pretty girl, oh pretty!" which he understanding (or rather guessing my admiration), bursts out laughing, shouts to the girl what I say, while the natives around laugh loudly and pleasedly, and the girl, swaying her graceful body in time with the motion of the canoe on which she is standing, waves her hand, laughs a reply, and—as the canoe is poled rapidly over the shallow creek by her boy brother—vanishes from our wistful gaze. Presently the native teacher passes and salutes us; he is dressed in white shirt and kilt, and is that girl's father, and papa, as usual, was not so nice as his daughter.

There was one girl who held aloof from us—shy, possibly; so, wishing to make her acquaintance, I hold up a cigar; she advances a little, and stops—frightened of the dog, perhaps. A man offers to take the cigar to her, but this, of course, I won't allow—no, no; Mohammed must come to the mountain, or no cigar; and so eventually she does, and thus we make friends with the very-much-tutored savage maiden.

Waiting for our boat at the landing-place, we are asked to go into the mail office, a corrugated iron box; and there, chatting with the agent and his subs, one of us mentioned (to an American sub) in objective terms, the practice they have in American hotels of not blacking your boots; that is to say, if you put them outside your door at night, there they will remain, silent witnesses of your just expectations—unbrushed. The Yankee laughed scornfully at this, and said we must have been in *very* odd hotels, and waxed quite hot over it, and hotter still when we, with bated breath, mentioned some hotels that do not think themselves odd—5th Avenue, for instance. Bowie-knives and revolvers looming in the distance, I made peace by telling some quite monstrous fibs. But he evidently thought that the blackening of the American character was synonymous with the state-

ment that our boots *did* remain outside our bedroom doors unblackened. But the world moves all the same, as Galileo did not say, and for the same good reason neither did we. And so on board; to-morrow we go to Levuka, capital of the Fijis.

A ridge of high green hills; bold spurs—gorged deeply between—falling sharply into the sea; at the foot of a precipitous hill, between two projecting spurs, forming a shallow dint in the coast line, is built Levuka—a little European and native town, the former consisting mainly of a long straggling street facing the sea. A coral “barrier reef,” entered by a natural passage, bars the harbour. Open to half the compass, the trade-wind blowing ever freshly upon it, it is a capital site for a small town; and a more beautiful bit of hillside than that, rising like a wall behind the town, I have seldom seen. Levuka is the seat of Fijian commerce, and by gracious permission of King Thakambau, governed by a European corporation, empowered to levy rates and taxes. Grog-shops form the majority of the wooden shanties, then come “stores,” a hotel or two, a few private cottages, and a suburb of native huts. There is a spot from which, looking one way, modern Fiji, with its grog-shops and steepled church, is alone to be seen, while looking the other way you behold ancient Fiji in the packed brown huts of the natives.

It is interesting to sit on the broad verandah of the hotel and watch the stream of natives passing, all more or less dressed in Adam and Eve's summer attire, and here you can see specimens from almost every island in the South Seas. The lighter-coloured and better-looking you may be sure have Eastern blood in their veins, while those darker ones hail from the regions of Papuadom, and have Papuan blood. The people here can tell you at once what island, of what group, they all belong to. As a rule they struck me as being unprepossessing in countenance, and very different from our Tongan friends; but still they are a fine set of men.

And hardly a less motley throng are the whites, planters, merchants, loafers, &c. If Fiji is annexed there will be a grand stampede of shady characters to happier climes. Annexation is the one and absorbing topic here, and everybody is loafing about anxiously awaiting it, as if for the millennium. Everything is in a terribly unsettled state; the cotton-growing not paying any more, has ruined many, and they do not care about going in for sugar until their land-titles are securer, until which, also, the banks won't advance them a farthing. At present most of the plantations are worth nothing: Fiji annexed, and presto! they will be very valuable. They say that if England refuses, a bloody native war will ensue among the chiefs for the kingship. Maafu, a Tongan chief, nephew and lawful heir of old King George of Tonga, is the man who all say will and ought to be king. He appears to be a fine fellow in every way, except one, and that the bottle (or rather he is too fine a fellow at that), but he would keep some of the ruling gentlemen who call themselves King Thakambau's "ministers" in order. Maafu has gained possession of the "Windward Islands," and is styled "Viceroy of Viti" (*i.e.* Fiji). He is by way of having given up his claim as old King George's heir, but *nous verrons*; it is still a disputed question who will succeed him.

There is nothing to be done at Levuka except to walk (roads are, of course, unknown, there are only paths), and to bathe in a delightful pool among the hills. These Islands are so painfully mountainous, that there are but two directions we can go in; one by devious paths up the hill-sides, which are too steep and hot to be pleasant, and the other skirting along the shore, which has the infinite merit of being flat. Here, this path along the shore is very lovely, going through groves of cocos, bananas, and bread-fruit, the sunshine piercing the branches above, chequering with light and shadow the vivid green of the grass, the purple convulvus, and all the vegetation beneath,

where nestle the native huts; now through cool dark woods, heavy masses of foliage noisy with birds overhead, and around, great buttressed stems springing from bare soil, honey-combed by repulsive land crabs, swarming among the roots of the mangrove; and now along sandy beaches, a wall of green wood, or of cliff, on the one hand, and the sea on the other. At low tide large stretches of hard ripple-marked sand are left bare, veined with shallow pools, full of little fish and shells, which girls, wading about, are picking for food. The dry sand above is covered with small crabs, darting away on tiptoe with marvellous celerity, so fast that at first they never strike you as being crabs, but as dead leaves only, being swept before the breeze. Sam found them out, though, in bullying a larger one than usual, which nipped and held on to his paw, making him hop about on three legs, very much puzzled. The grass and bushes lining the shore were full of hermit crabs, living in small shells of great variety.

Some three miles from the town we came to a bay, through whose sands ran a broad stream, flowing from the hills, which here fell back in a semicircle. Wading the stream, we went up to a fishing party of about thirty women, girls, and children, who were fishing with hand-nets. This work seems to be left entirely to the females and children in these islands. Their fishing costume is simply a fringe of pandanus palm leaves, or of long grass around their waists. Slung over their backs were baskets for holding the fish. The nets are of two sizes—double and single-handed; the double ones being six or seven feet in length, and fastened along two light poles, held by two women. The single nets are of all sizes, from that which a full-grown damsel could wield, to the size of a handkerchief, worked by the smaller children.

Wading out, the poles held one in each hand, with nets outstretched between, and the children swimming, they gradually inclosed a circle, the two-handed nets in the

centre and the small ones on the flanks, the latter gradually closing in as they all advance shorewards, and the former holding theirs at an angle in the water—one pole resting on the ground—every now and then tilting them up with perhaps two or three fish, and then indiscriminately, with many an ejaculatory shout and triumphant laugh, the small nets close in, scooping up fish, which are then transferred to the baskets. Beckoning to the prettiest girl to come and show us her basket, which has some half-dozen fish inside it—garfish and small smelts—M. offers her money for basket and all, and then the rush that ensues! The old women, like so many herons, came scuttling up, and soon we were mobbed by the whole dusky crowd: the younger ones laughing at the joke of our wanting the fish, the girls all pressing their claims of beauty and fish, and the old crones as cross as possible, gabbling at the girls, who, alas! are preferred before them. There is no charm in these old women, they are ugly, skinny, and jealous, and go away, you horrid old things!—and so leaving them to fight it out, we walk on, M., as I foresaw, throwing away his basket of fish into the bush almost directly.

We had come out to see a cotton plantation, but could not find it, and walked two miles further than we need have done; it being after all close to where we had watched the fishing, but hidden by a thick belt of coco-palms and bush. This we came back to, and finding a path through, soon came to bananas and then the cotton. Further up, cresting a hillock, was a cottage, into which we were invited by the owner of the plantation. The view from here was beautiful; in front, the room looked over the plantation of cotton, bananas, and cocos, bounded on either hand by wooded slopes, while above the long line of waving palms below us lay the sea—deep-blue, glittering in the sunlight, flecked with white horses by the breeze which blows freshly into the room. At the back, appearing as close in the clear, hot air, as if one could almost

touch them, rose the peaked green hills, which, as I said before, fell back here, inclosing the plantation.

The cottage was built of reeds, which make a compact and pretty wall; two rooms, the beds and sofas covered with native mats made from the *pandanus* palm leaf. The grass-plot on which stood the cottage was bright with garden flowers, and hibiscus shrubs, crimson with blossom. 'Tis odd that with so bright a flower you can black your boots, is it not? Yet so it is, you have but to rub your boot to produce a well-polished result.

Our host had been very ill with rheumatism, which, he says, is common among the whites. He offered us bread and cheese, of which we gratefully partook, though the bread was heavy enough to pierce an iron-clad; but we were hungry. He told us that the musquitos were really awful, and the doors have to be shut directly it gets dark, otherwise the insects come in by swarms. Thank goodness they don't find their way on board, and in the daytime, on shore, they don't bother, excepting perhaps an occasional rogue musquito. This plantation, he said, was paying him, and well, too, if he only gets eighteen-pence a pound for his cotton, which is a ridiculously low price, twenty-one and twenty-two pence being about the average price out here now. But these prices, you hear, have been and are ruin, so it was satisfactory to find one planter who was cheerful over it.

Small parties of natives, men and women, we meet along the shore, some carrying coco-nuts already taken out of the husks. Then you stop, and offering some small coin, ask for "Coco-nut," and they crack open the top, and you quaff the goblet of luscious water. It is a most refreshing drink, and puts a fresh spirit within you when hot and tired.

There was one party of a dozen fine, savage-looking fellows who came swinging along the shore, their faces smeared with charcoal (mixed with oil), their long, stiff, frizzled hair dyed the most absurd colours—from orange

red to dark lake—grass garlands of long strips of red, yellow, and white stuff round their waists, and garters of black seaweed below the knees. We heard afterwards they were the disbanded soldiers of some chief. What they were going to do I cannot say, but they looked as if they were going to sack Levuka, spite of which they willingly stop when we ask for a coco-nut, and seemed surprised at the gift of a sixpence. They were all armed with heavy clubs of different patterns, and one of them whom I asked to show me his, looked quite as capable of giving it to me over my head as into my hand, but he didn't, and I survive.

A mile and a half from the town, passing through a native village, and then a short struggle up the wooded hill-side, brings one suddenly to the edge of a large deep pool, the water splashing down a black crevasse at the upper end, and surrounded, excepting where one comes upon it and where it falls over a ledge of rock on its seaward course, by a low wall of trailer-hung grey rock, above which springs a mass of varied vegetation. Some distance below, and connected one with another by a series of deep little basins and waterfalls, is another almost similar pool, and from the pool above you can creep to the one below, refreshing yourself in each basin on the way. It was perfect, the water deliciously cool, and the pools—talking not as *Challengers*, but as ordinary mortals—unfathomable. Coming up to bathe here was *the* thing to do at Levuka, and the only thing, excepting, indeed, to loiter among the native villages and study Fijian home life.

One of the nicest native huts I have yet seen was in this village below the bathing-place. It was very large, and, as they all are, very low-eaved, the low walls and roof thatched with brown leaves, making it look like a large dead leaf stack. Four openings—they can't be called doors—are in the walls, two on each side of the house, to get through which you have to stoop very low.

But I found that the most elegant way was to sit down at the entrance, and then, in as *negligé* and graceful a way as you are capable of, to tilt your legs in first, and then follow them up with their body. In this manner you are more prepared to meet the inhabitants with proper composure, and you find yourself in a cool and—coming from the light—a dim chamber, the floor carpeted with clean, bright-looking mats, edged with red and blue worsted; underneath them are strewn palm leaves and rushes, forming a kind of cool cushion all over the floor. On these, sprawling in divers recumbent positions, are some dozen women and girls, who raise themselves on their elbows as we enter, laughingly muttering words of welcome in return to our nods, looking, for all the world, like a lot of brown seals. From dim corners eyeballs glisten, but what they are set in or whom belong to, you cannot see until you go close up, and then find they belong to a young and pretty brown seal, who, lying full length on her face, with her chin supported on her hands, bursts out laughing; or perhaps, be it added, you discover a skinny old woman. One of them is cooking yams over a fire, which, smouldering on a bed of sand, is separated from the matting by four logs arranged in a square; another girl outside is cooking silvery little smelts, which she rolls up in banana leaves, and then incloses them in an oven formed of hot stones.

The door-posts are entirely plaited over with sennit made from hibiscus or coco-fibre, stained black, red, and white, and wherever the light beams and roof scantling have to be fastened it is done with this sennit, neatly, and finished off in patterns. The reed walls are hung around with the family knick-knacks, and round the central post supporting the roof are hung coco-nut shells for holding water. Great rolls of tappa, stained with red and black patterns, are lying about, and are hung up at night to form screens. The whole effect is bright and pleasing, the brown young women being not the least pleasant feature, and the old women—contrariwise. Very different in middle (and to a

less degree in older) age are these people from the Tongans, who increase vastly in volume up to a certain age, whereas here they appear to get old much sooner, and a plump elderly party I have not yet met in the Fijis. In these villages during the day, women, children, pigs, and fowls are the only inhabitants, the men being away either in the town, or working at the yam and taro cultivation—the last a very wet and dirty job, as taro grows under water in mud.

You will think that one does not come to the South Sea Islands to sit in hotel verandahs and there smoke and imbibe cooling drinks, but Levuka, as a matter of fact, does resolve itself into that more or less; and very pleasant it is after a hot walk to come here and get cool in the sea breeze, and watch the natives passing in front. Two monkeys are on this verandah, one chained and for ever walking up and down, now and then uttering a doleful cry; the other is smaller and not chained. A changing group of brownamoors is always round these two, the small monkey occasionally scattering them by jumping up on their shoulders, or running after a man carrying a big bunch of bananas, who bolts in terror. Talking of monkeys, I wonder how these people first learnt to sit on their heels? With a tail I could do it easily, without it I necessarily topple backwards, so how long, in remote ages, did I lose my tail before they did theirs?

The Fijians themselves won't work at any continued labour, and this is the reason why we see these many specimens from other groups who will work, and are employed on the plantations. In the street one day we saw a number of small dark natives dressed in red shirts, red fishermen's caps and black trousers crowding into a store, and going there we found a planter paying off "labour." These were all New Hebrideans, who had been working with him for three years, and were now being paid off in goods—old burnished-up Tower muskets, small chests, a bottle of gin each, and some powder and shot, being the

chief articles, besides the above-mentioned garments. The planters are bound by law first to bring their labourers to Levuka, and there register them through the English consul, bringing them back again at the end of their time, and ship them off to their several islands at their (the planters') expense. They were a small, ugly, dark-skinned lot. As we go to Api, the home of some of these men, we give them a passage; others go in a small schooner lying near us.

People here give a bad account of our friends the Tongans, who are "not to be trusted further than you can see them." I suspect they are more or less deceitful, but I did not find it out, and I only write my experiences. Compared with these natives of Fiji, the Tongans are in appearance infinitely superior. The Fijians who live in the interior have still undoubted cannibalistic tendencies, a known case having occurred about a year ago; and where missionaries or civilization have not yet penetrated, cannibalism is doubtless in full swing. And we may be sure that every middle-aged native out here knows well the flavour of human flesh, including His Majesty Thakambau, "King of the Cannibal Islands."

The change is great indeed. A party of our officers made a boat-excursion to the large island of Bau, where the king lives. They found him, dressed in a waist-cloth, lying on his face in a hut, reading a Bible. Not far off were the great stones against which they used to kill the sacrificial victims—battering their heads against them till dead. There, too, they saw a grand religious "maki-maki;" hundreds of men and women dancing, and singing New Testament verses, before Wesleyan missionaries, who, sitting at a table, received the money-offerings of their converts as they defiled before them dancing and singing.

The strange influence which missionaries have over these natives was well shown by many of them coming to our party, begging for small change in exchange for silver Mexican dollars; for, said they, we must give something at this maki-maki to the missionaries, and if we have no

smaller change than the dollar we will e'en have to give the whole heavy lump of silver—much, needless to state, against their will.

I have no wish to burn my fingers by writing one word against missionaries, for my sympathies are all with them ; but it *is* this kind of thing which naturally must and does tell against them in the mind of a stranger visiting their "fields:" tells against those flourishing statistics of theirs—statistics of souls gained and of money collected. Of the latter I have told you one little fact, and of the former I can tell you another little fact, which came under our eyes. In a village of I sha'n't say what island, we saw a "native teacher" (pupils of the missionaries) *whip* the villagers into a little chapel-hut, where accordingly they went, sat down, and sang hymns very prettily, and, much as you may imagine, to our edification, who had witnessed the physical suasion exerted on their skins beforehand.¹

The contrast between semi-savage Fiji and peaceable Tongatabu, with its orderly government, splendid grass roads, quiet, finer, and more attractive race of people, is certainly very striking. We were three full days at Levuka, during which time H.M.S. *Dido* came in, last from Wallis' Island, where she had been to the wreck of a large French man-of-war, abandoned on a coral reef, let us hope nothing of that kind will befall us. We went back to Kandavu on Aug. the 1st, to complete the survey we had commenced, and to catch the mail from Sydney.

And so to the island again of Kandavu. It was delicious prowling about in these woods, which were seldom dense enough to prevent the sun filtering through the green cloud overhead, scattering splashes and pencils of flickering

¹ There is an ever-present chance, however, of strangers, when sailing on these seas, having a fine opportunity of judging missionary labour by a standard different from these "riling," and comparatively, petty instances, mentioned above. Should they get shipwrecked, how the most firm upholder of the why-not-leave-them-alone theory would thank their stars if, instead of being cast on an island whose inhabitants are still cannibals, they were thrown with savages among whom had penetrated missionary influence!

light on the lower branches and undergrowth. Large black butterflies, purple-spotted, flap dreamingly about, lizards glide and rustle among the dead leaves, parrots—close to, though unseen—startle one with their harsh cries, pigeons boom in the distance, and wattle-birds burst out with loud, liquid, and many changing notes. As I sat, hidden by ferns and wild pine-apples, on a wooded bank, two parrots alighted on a small breadfruit tree growing a few yards below me, and presently flash succeeding flash, fifteen gorgeous birds were screaming quarrelling, and fluttering among the foliage. It was quite beautiful,—I never saw anything in parrot-life to equal this scene; the tree seemed alive with their crimson and bright green plumage, intensified by the subdued colouring of the shady woods. Sam and I, probably with different thoughts, watched them unobserved for a long time, then up we started, and the scene dissolves screaming away.

A little further on is the beach, *the* place to dream of *the* spot to smoke and get cool in, as, while you lie on the white coral sand, the sea-breeze plays on your damp corporation, the waves ripple at your feet, lovely little lories fly overhead from palm to palm, and wattle-birds, parrots and pigeons make melody (or *not*) in the woods around. 'Twas perfect, and deliciously tranquil, till a gentle booming near by makes me grasp my gun, and stalk a few yards to a group of noble trees, and out fly a pair of pigeons—bang, bang, and down they come, and away fly lories, wattle-birds, and parrots, while Sam and I pick up our game and stroll back.

These are the same lories here as we found at Matuku, and we saw them nowhere else afterwards. The pigeons are large and handsome birds, with slate-blue plumage; they are difficult to get at, and though there were plenty about, we were never very successful in our warfare against them; they sit on the top branches of the highest trees in the evenings, and boom out loudly the fact that they are there; but if you do knock them over they often fall in

such thick bush that you can't find them. The parrots are the commonest birds; from the yam-grounds flocks of from ten to twenty will fly up and settle in the surrounding trees as you appear out of the bush; and as we walk among the woods we hear them all round about, though they are often hard to see. A bleached and leafless tree standing in a clear space was a favourite resort of theirs, and the contrast between the whitened branches and their gaudy plumage in the sunlight was very fine.

Men are often working on these yam-grounds, and sometimes the older women, the working dress of the former being one banana leaf, which you know is several feet long and more than a foot broad, and very picturesque they look in this green attire, working on the brown soil, which is very much their own colour too. Sam frightens the small children awfully—they flee screaming, and I really thought a small toddle whom we met in the woods was going into a fit, and I was much alarmed. Sam takes no notice of them, but at first we were alarmed lest he might confound them with penguins, which are about the same size, and which he used to have a playful habit of nipping severely in the small of the back. Even some of the men are frightened, and as they see old Sam come floundering round the corner, run up cocos and give his majesty Sam a clear gangway, getting well chaffed for it by small boys who are following us.

Odd little touches of native character we come across in our rambles. Once having gone off the path unexpectedly I came upon a yam-ground where, under some trees, several natives—men and women—were seated. Astonished exclamations at my appearance, my pigeons, my eyeglass, my dress, were followed by hand-shaking, and an offered seat on a stone, while they, pointing to a heap of earth, invited me to partake of yam, which was being cooked; the old lady—how ugly she was!—insisted on my sitting beside her, a girl bustled about the fire, and they all were as nice as possible. But pigeons I wanted, not yams

so the old fellow came with me for an hour's walk, but not a pigeon did we get. These natives' sight is marvellous, and they will instantly see a pigeon where I look in vain for minutes.

Then in the woods, we came plump upon three girls, bathing in a deep water-hole alongside the path. The young chief said to me, grinning, and pointing to my clothes, "Verr gude, plenty monnee, ha, ha, ha!"

At the village I became a popular man, owing to my tobacco-giving propensities, no doubt. There were four very good-looking girls, and there were many, though fine strapping wenches with any amount of good nature imprinted on their broad-as-long countenances, who still were not good-looking. The children were much lighter in colour than the older people, and are pretty brats as a rule. One little girl, with great dark eyes, a mouth from ear to ear, a wavy tuft of hair over the forehead and another at the back of an otherwise shaven head, was perfect in her little way. Many of their huts were very nice and clean inside.

I confess that I like these people. I like the involuntary homage they pay us, as we sit down on their mats and they come and sit round us, and we talk and they talk, and both make mysterious signs, the unintelligibleness of the whole proceeding much enlightened by laughter; all very much unlike anything one has come across elsewhere outside of the South Seas. My eyeglass is a great spirit to me; with it I fascinate them, fixing my glassy glance upon them till they relapse into shy giggles or into intense curiosity. And then they wish to look through, or try and "fix" it. Now I don't mind sometimes a girl rubbing her cheek against mine while so doing, but I do object to a man doing this; so though, of course, not encouraging the one, I certainly do discourage the other.

One morning at daylight two of us landed on the mainland, intending to shoot pigeons on the isthmus. With a native to carry everything that was heavy, such as

guns, cartridges, and our luncheon, we walked along the mangrove-fringed shore, made feasible by a low tide, for two miles to the head of the bay. From a creek, opening into the mangrove-wall on our left, suddenly rose a flock of duck, and, as suddenly four fell to our four barrels. A satisfactory commencement, which was not followed up, for though we walked about the isthmus among the woods for hours, not a pigeon did we get, though we heard their tantalising boomings. The walking was pleasant, excepting once, when we lost our way, and had to break through jungle of the most intense thickness back to the shore; an agonizing and most melting quarter of an hour's misery. A belt of grass higher than my head, every blade of which cut like a razor, was one of the chief features, varied by an entangled web of lianas round our feet, legs, arms, bodies, and guns, through which by pure force a way had to be torn. At a small village we saw an albino, who ought to have been brown, but was an unhealthy pink—not nice! At another two girls were laying out on the shore, to dry in the sun, a long roll of tappa.

Very charming and primitive it is when walking along in these woods to hear sounds of advancing laughter and talk, and then suddenly among the green foliage to meet a bevy of girls, brownly beautiful (also, to tell truth, some brownly ugly), wearing naught but green fringes of grass or pandanus leaves round their waists, nets in hand, and fish in baskets, returning to their village from a fishing excursion!

Going back to the bay we found women paddling about picking up shells; the hard ground above high-water mark pitted with holes, into which in a twinkling pop little crabs, of which one big claw is the most visible member. Up to our knees sometimes in the sea—now high tide—we arrive at a village, where our gillie tries to get us a canoe to go back to the ship in, and soon we see one being dragged down to the water by two girls and an old man. Two girls? no! only one girl, the other was a Hebe—a

goddess of beauty, although a brown one. A perfect model of symmetry and grace, an houri, I tell you! Draped in a rough Bath towel, a hibiscus-blossom or two in her yellow hair; and pretty?—she was beautiful!—and to her would I give the apple before all others I have seen. I declare, without joking, that if she had only been a little more dressed, not quite so brown, and a little less modest, I should, with confidence, have produced her as a “belle” anywhere and in any country!

Her old father paddled us off to the ship in a somewhat rickety canoe, in which Sam was much perplexed how to dispose of his body, but finally, greatly to our relief, lay down full length, with his head over the side. The canoes here are very different from those of Tonga, being much broader, the outrigger far heavier, and a light staging connecting the canoe and outrigger. They are very stable, and usually propelled, not by paddling, but by sculling, the men standing up, and working a small oar in front of them almost perpendicularly in the water. The double canoes are very large, a second canoe taking the place of the outrigger, and strongly fastened to each other. Between the two canoes is a high platform with a roof of mats or reeds. The sails are made of matting. They sail at a great pace, and any number of people can get in them, the canoes being sometimes so deeply sunk in the water that nothing but the platform is seen above water, while the mast, which steps well forward, looks as if it had no connection with the canoe at all, as it churns the water up ahead of the platform.

My Scotch host of Australia was in the Sydney mail steamer that arrived at Kandavu while we were there, and I showed him the beauties of the island, with all of which he, too, was charmed. In the village we went into nearly every hut. It was again Sunday; outside the church two girls were beating on the edges of drums, which looked like cross sections of canoes with the ends filled in; these were the bells. As we came through the village after a

stroll, a girl called to us from a hut, and creeping in, we found two men and two girls—the nicest of the village, and my greatest friends. We drank coco-nut water, and seeing a kava bowl I looked in it and found it full of ready chewed kava, just as it came out of their mouths, soft and wet, each about the size of a large walnut. Five mouthfuls of it, all ready and quite irresistible! so we asked the girl to prepare it.

Pouring water from coco-nut shells into the bowl she stirred it about for a while, then gracefully and quietly, her great brown eyes now fixed on us and now at her work, she drew again and again a bunch of hibiscus-fibres through the gradually clearing liquid, after each sweep of the hands, rinsing the fibre-bunch dry, and shaking the unmelted kava particles out on to the matted floor, to be again used afterwards. And so till there is nothing more for this sieve to catch; then, dipping a coco-nut cup into the bowl, she passes it to us, and we drink; who would not from her hands though 'twere poison? but not much, oh, no! A weak peppery pungent taste, and the colour that of *café-au-lait*, is what it tastes and looks like. You know that it has come from their mouths, where it has been slowly chewed, and, putting romance on one side, this is not, cannot be nice. But then I saw one piece actually come out of my chum's mouth, so of course that made it better, but I also saw a piece come out of her husband's—or whoever he was—that again made it worse. They are immensely fond of it, and it is no worse than any other intoxicating liquor, in fact much better than most.

Before we left Kandavu the native governor of the district got up a "maki-maki" (*i.e.* a native dance) in our honour. The said governor was a fine old fellow, with a European cast of countenance, and grey, grizzled moustache. He, and a "lieut.-colonel" in the king's army (or more properly speaking savage horde) came on board and lunched, both dressed in respectable cloth coats, white cotton kilts, and bare-legged, of course.

After dark we went on shore and found the first dance had already commenced, torches made of palm branches, tied up in long bundles, throwing a lurid light over a weird and savage scene. On a strip of grass in front of the huts were the dancers, and close around, grouped picturesquely on the top of great piles of coco-nuts, or squatting on the ground, were the natives of this and neighbouring villages, each sending their quota of men, who danced in turn. Glorious Rembrandt effects, as the torches' flames leapt and fell in the still night air, bathing with ruddy glow the strange scene around—the semi-nude dusky natives, chattering, laughing, glittering eyes and white gleaming teeth, on the reed-built huts, on the foliage above, and flushing redly up the white trunks of the coco-palms.

Round a standing group of tawny-hued boys and girls who formed the band, some two dozen men, dressed in fantastic manner, their faces blackened, and skins shiny with coco-nut oil, were dancing. Wound round their waists they wore great rolls of tappa, or white cloth, falling nearly to the knees, and over these, belts fringed with long narrow streamers of brightly-coloured stuff—red, yellow, and white—surging and rustling with every movement; on their heads, turbans of finely-beaten tappa, transparent and gauzy, piled high in a peak; garters of long black seaweed or grass, strung with white beads; anklets and armlets of large bone rings, or of beads worked in patterns; tortoise-shell bracelets, and bead necklaces, from which hung in front one great curled boar's tusk. Some were dressed better than others, but all in the same wild style.

Moving slowly in a circle round and round the band, whose clapping and rollicking strain they accompanied by a loud droning kind of chant, at the end of each stave chiming in with the band with a simultaneous shout, a sudden swaying of the body, a loud hollow clap of the hands—once or twice repeated—and a heavy stamp, stamp of the feet; a moment's halt and silence, broken plaintively by one of the singers, quickly taken up by the remainder

to a clapping, rattling, vowelly measure,—and again the dancers circle slowly round, swinging their arms and bodies, clapping, shouting, and droning in faultless time together. These first were peaceable dances, representing several subjects; now it was fishermen hauling in their lines, faster or slower as the band sunk to a single voice, or again burst out in a volley of clapping, jingling song; now the peaceful art of agriculture—planting taro, &c., and then a more violent subject, as walking round two abreast, they all suddenly stopped, throwing themselves back in grand position; jerking their heads from side to side as they went through the motions of shooting with bows and arrows. The perfect "time" they all kept—both dancers and band—whose claps all rang as one—was really astonishing.

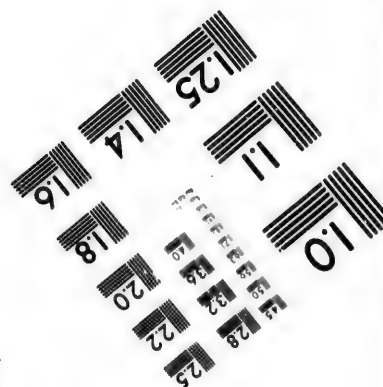
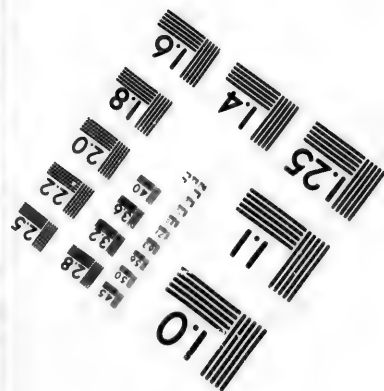
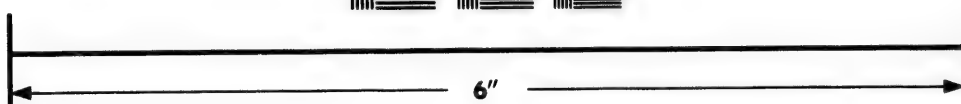
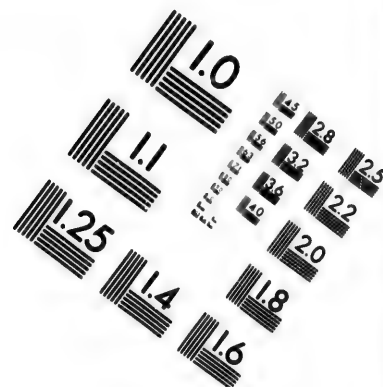
Next came the war dances; the singers move nearer us, and sit down on the ground, leaving the spot they stood on before now clear for action. And again, one voice commencing slowly, the rest join in, clappingly, jinglingly, bubblingly, slightly nasally, a strange ring audible throughout, and this time accompanied by the shivering boom of a bamboo drum. And now look out! From out the surrounding gloom, dimly fluted with the white stems of the cocos, into the red flare of the torchlight, emerge slowly, one after another, in Indian file, a string of mad, savage-looking devils. Crouching and bounding, forwards, backwards, from side to side, they gradually approach. In their hands great clubs, the tips ornamented with plumes of silvery "reva-reva," flashing whitely as they whirl them around; their fantastic finery rustling loudly with every wild movement, their eyeballs glaring out from blackened faces, their motions sudden and altogether, their splendid stalwart forms swelling with muscles and shining with oil—they looked awfully savage and fine, and to a captive bound and about to be eaten one could imagine well that the whole performance would be thoroughly enjoyable! Now stealthily working their

arms and clubs as if feeling their victim, then with a shout bounding forward, brandishing aloft their clubs, suddenly as if struck by some unseen hand, falling to the ground on bended knee, swaying first to the right, then to the left, and bringing their clubs down with an ominous thud; again leaping up, bounding back, from side to side, then to the right-about, and all over the place; it is impossible for me to attempt describing them, so I won't. They were, I suppose, braining enemies by the dozen, and as they worked themselves into mad excitement, so the more they bounded, smashed their enemies' heads, and were happy. Their drilling was admirable; standing in line with the string, every club whirled as one, every bound and frantic motion went together; and we are told they make fine soldiers as far as drill is concerned, from this idea of time that they have.

In these dances they were led by a small boy—a chief's son—this function being their prerogative. A lithe, tawny little savage, with a great mop of yellow frizzled hair, and his face dabbled with charcoal. In his hands he carried an enormous palm-leaf fan, with which he directed the dancers. Going through all the movements of the dance, he at the same time careered over the ground, now shouting loud words of command to the singers, and now to the dancers, yards away on their flanks. He was simply splendid, flying about like a demented demon, here, there, and everywhere, the dancers, whether their backs were turned or not, all keeping exact time with him. As these men appeared, so, slowly, still bounding voicelessly, terrifically, about, and whirling their clubs, they vanished into the darkness. Then came the dancers of another village, and danced the "fan dance"—the prettiest one we saw. Instead of clubs they held huge fans, curiously fashioned from palm leaves. Then followed another savage dance with spears, which was very fine too.

After the dances they adjourned into huts and drank kava. I went into the largest crowded with dancers





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squatting on the floor, while one in the centre was preparing a great bowl of kava. I was nearly choked with the powerful odour of the coco-nut oil and of—well! never mind; but you can imagine how hot they must have been after their tremendous exertions, from the excitement of which they had by no means recovered, their muscles still quivering, eyes glaring, and chests heaving. Grandly-made fellows some of them were, with herculean chests and shoulders—models of strength and symmetry. The bowl of kava came round to me with a request to drink, but it not having been, as far as I knew, chewed by beauty, I declined with a face and thanks; as I told you before, it makes all the difference in the romance of kava drinking to know by whom the kava is chewed. Chewing kava in Tongatabu is not allowed, it being mixed up with those heathenish practices which the missionaries say they can't do away a part of without "tabooing" the whole, so there they scrape the root and make their beloved drink. And in some of the South Sea islands kava-drinking is forbidden altogether, the result being that the natives resort to an infinitely worse and more damaging liquor—rum distilled from oranges, which makes them raving drunk instead of only quietly stupid.

Leaving Kandavu on the evening of Aug. the 10th, we steered for Api—one of the New Hebrides, and the home of our passengers—arriving off the group on the 17th. During that night we hove to close off the islands, and next morning we sailed past "Two-hill" and "Three-hill" Islands, and arrived off the south coast of Api at noon, stopping opposite a place which our Api natives pointed out as where they wished to land.

A lovely island it is, their home; low tumbled hills with valleys between, and the whole covered with an unbroken mass of foliage, from which rose here and there the dome-shaped forms of some "forest giants," or the slender stem of an areca palm. I never saw anything to equal the *look* of this dense and luxuriant vegetation of Api. It

was a showery, cloudy morning, but now and then a gleam of sunshine shone through a cloud-rift over the hills, and played on a flying column of rain, through which, as seen through a veil, glittered and sparkled the forest beneath. These same showers, so pretty from the sea, we found by no means so pretty or pleasant when they dropped over us on shore, which they did lightly at intervals during the afternoon.

We soon saw some naked natives walking towards us along the shore, waving green branches—the signs of peace—and before the first boat landed there were a considerable number collected. The first boat went on shore armed, with the captain and first-lieutenant, concealing their revolvers, and taking with them two of our passengers to see how they would be received. They had to pull some distance down the shore before they could find a good landing, the natives appearing rather uncertain as to what they should do—bolt or no; however, a few ran along the beach to meet the boat, when they soon made out their countrymen stuck in the bows, waded into the water, hauled the boat towards the beach, and shook hands with Tommy, the “boss,” and most intelligent of our lot. A few women now appeared, and altogether there were about thirty natives assembled. We then landed all our passengers with their guns and chests, and much greeting took place between them and their friends.

Later on we landed, under orders not on any account to leave the beach. By this time many of the natives had gone off with the new arrivals, and the women had disappeared, but several men and boys still remained near the boats, and with one of our passengers, who was lame and could not walk. They were all armed with tomahawks, hooked over their shoulders; some had slender stick-clubs, and others small bows and arrows. The chief had a good and well-carved club, and when one of us put out his hand for it, offering to buy it, the chief held out *his* hand for the gun, as if for that only he would exchange the club, which

"one of us" did not exactly see in the same light. I bought for some sticks of trade tobacco and a couple of tin match-boxes full of matches, which they appear to think very wonderful things and great spirits, a set of bow and arrows—a sheathful of ten poisoned arrows, barbed and unfeathered, and a few unpoisoned ones, which they hold loose in their hands, while the poisoned arrows are carefully wrapped in sheaths formed of a banana leaf. One queer old fellow, seeing me hold my purchase in what he deemed a clumsy manner, took them from me, and showed me how to hold them according to his view, drawing himself up, and strutting about a few paces; and very fine he thought himself, no doubt. They are a small, very dark and ugly race, wearing their hair short and frizzled. The women wore a short girdle of split pandanus leaves, the men the scantiest of waist-cloths, and the boys—nothing. Oddly enough, one of the natives, the only one dressed in shirt and trousers, the Professor had met on a plantation in Queensland, and had then told him, on learning that he was an Api Islander, that we were going there; but happening to land at the exact spot where he lived was a curious coincidence. Two others had been labourers on Queensland plantations; they understood a few words of English, and said they intended to go back; another had been to Levuka.

Most of the natives appeared perfectly at their ease with us; but a few suspicious of something; and two officers walking along the shore to the right saw two natives armed with spears and clubs looking at them from out of the bush, as if hiding; they sat down and beckoned them to come, in hopes of buying their weapons; but they at once disappeared into the bush. Some of our passengers went along the shore to the right, some to the left, their chests carried by their friends: and among the first that went away was the chief with one of the new arrivals, who probably belonged to his tribe and would be pillaged of all he had. I, with others, walked along the left shore for

over a mile, following, as it happened, close upon one of our passengers, who was rapidly walking away with a *posse* of friends. They appeared not to like this, and kept on looking back at us and then running. However, at last they stopped, as if not wishing to entice us further; we came up to them, and with the assistance of our quondam passengers bought a few clubs and bows and arrows. We did not go further, and what became of these natives I did not see—whether they struck into the bush or kept along the beach.

It ought to have a good effect upon these islanders our giving them a passage, feeding them well, providing them with tobacco, &c., as we did for some time. A man-of-war was off the south-west coast a year or two ago, and her captain landed; but the natives appearing timid and inclined to be hostile, he gave them a few presents and left. Again, the other day, one of H.M.'s schooners which cruise about these islands to prevent kidnapping, hove-to off the east coast, but the natives appeared so hostile, waving their spears and bows, that they did not risk landing. A big ship like ours would of course overawe them more or less; besides which, in this case our passengers would no doubt tell them of the kind treatment they had met. But still the natives came down to the beach waving the emblems of peace and welcome, before they knew that we were carrying back their countrymen. No missionary, or native teacher—who usually paves the missionary's way if possible—has been on this island, so we had the rare chance of seeing a *bona fide* savage island; and it was a novel sensation to me to see these naked savages striding along the beach armed with tomahawks, clubs, and bows and arrows, and mighty sorry I should be to put myself in their power. The mission to the New Hebrides is Presbyterian, and is, and has been, the scene of some of the noblest missionary work performed anywhere among the South Sea Islands.

A beautiful wall of foliage and flowering trees rose from

a dark-coloured shingly beach, where there was easy landing, and not far from which a river ran into the sea, compressed into a rapid rivulet where it crossed the beach, but broadening inland into a considerable sluggish stream, backed by a high hill, over which poured a glorious torrent of vegetation, while immediately to right and left the ground was flat and densely-wooded, a few tall palms shooting gracefully up from the shrubbery fringing the river—an infinitely soft and lovely bit of scenery.

Somewhere, not far off in the woods, and probably higher up on the river's banks, there was, we thought, a village; for, wading a short distance up the river, we saw small plantain plantations, and heard the natives talking; but it was too far from the beach to visit without infringing orders. They brought us bunches of unripe plantains, yams, and a few coco-nuts, though, from where we were, we could see no cocos.

Our passengers all landed with their suits on and scarlet caps, and seemed very proud of themselves. They were very quiet and uninteresting during the cruise, and very much and disagreeably did they smell of unperfumed coco-nut oil. We were very glad to get rid of them; Tommy appeared somewhat adrift on shore, I thought, and did not leave us for some time. The returned Queensland labourers, excepting one, were dressed chiefly in nothing, though they, too, probably had returned clothed. With the exception of three or four, all the Api islanders appear to be of small stature, and we calculated that perhaps four feet three inches was for them a fair average height. One man had his nose painted a bright red; another little oldish man, with a face just like a small monkey, and a jibbering voice to match, was much interested in my eye-glass. They were well-made enough, with dirty-looking sooty brown skins—almost black—and their hair cropped pretty close. The boys were much lighter coloured than the grown-up men.

I took very good care not to take Sam on shore, as

much from the fear that they would kill him from fright, as that they would secure him for gastronomical reasons of their own; a dog from this same ship, during another commission, having suffered that same fate. And the account that mentions it, adds that the dog was shot just on the opposite side of the stream where fell, murdered, John Williams, the missionary. Perhaps a slightly *malàpropos* remark?

There were no canoes to be seen, and I don't suppose they have much use for them here, though they may have been hidden in the bush.

The New Hebrides group of islands are all—except one small one—of volcanic origin, small fringing coral-reefs only occasionally occurring round the shores. We saw scarcely any birds, excepting a tiny swallow flying in great numbers in and out from the foliage fringing the shore. There were very few natives left by the time we shoved off for the ship, the majority having gone off with the new arrivals. A strikingly different race from the Eastern Polynesians are these Melanesians, who are about as savage and treacherous as a Polynesian is mild and good-tempered; and comparatively very few converts have been made to Christianity—or rather, I should say, to civilization. We distributed clay pipes and tobacco—which they thrust through their armlets—all round, and left Api that evening, the ship during the day having been dredging.

We steered for the entrance through the "Great Barrier" reef, 1,300 miles away, where we arrived on the 30th, sounding the day after we left in deeper water than we have found for a long time—2,650 fms.,—and six times afterwards in somewhat lesser depths, in which we twice trawled. On that evening we passed Raine Island, which lies on one side of the entrance through and into the maze of reefs, and anchored close to it on a coral patch that night. Raine Island is a small extent of sand on the top of a coral reef, having on some parts of it a foot deep of

soil, and is marked by a large beacon-tower built with coral rock by two men-of-war, assisted by artificers from Brisbane in '48.

Wheeling over the ship and island in countless thousands were sea-birds, boobies, terns, frigate- and tropic- birds. And, by the way, I have never seen more bird-life at sea than on this stretch between Api and Raine Islands. Nearly every day long-tailed tropic-birds flew above and around the ship in twos and threes; great flocks of tern were seen fishing—diving into the sea with a splash in the distance; occasionally a frigate-bird soared and wheeled quietly overhead with motionless wings, and long forked tail constantly opening and closing; stupid old boobies, perching on our yards and boats, were caught and ruthlessly skinned; little petrels skimmed our wake; while sharks, the brutes! glided around us whenever we stopped—sounding or dredging.

The next morning the ship got under way, and a number of us landed on Raine Island—a wonderful sight indeed! As we landed the terns rose *en masse* in a cloud, really darkening the light, and perceptibly fanning the air with their wings as they hovered, screaming shrilly, above us. The ground, covered with long coarse grass, and, in some places, overspread with a creeping plant, was alive with young terns, cheeping and feebly falling about in the grass. There were boobies of three species, too stupid and lazy to fly away till you actually made them; even then commencing a hoarse, indignant argument—in the meantime, I fancy, mentally gathering up their skirts—before they turned and flapped slowly away. Most of these were sitting on newly-hatched, ugly little offspring, or on eggs.

The boobies and terns were nesting, or otherwise looking after their young, indiscriminately together; but the frigate-birds had a rookery of their own, with young downy creatures standing sheepishly up, nearly ready to fly.

Dead turtle, faded skeletons with shells peeling off

were lying about here and there. At one place, where they had tried to get up a steep little bank from the sand on to the grass, they were piled in a heap, having from weakness or other cause failed to get up, and so died. Why they tried this particular spot was, of course, their own lookout; but as it was the only steep bit in the whole island round, it appeared to us stupid, to say the least of it. Others were lying dead among the grass in the centre of the island. I don't know what causes turtle to die—old age, I suppose. It was a pity for us that this was not their egg-laying season, for which purpose the beach seemed a perfect one.

Sam was great fun, and enjoyed life amazingly; how he dashed at the boobies, caught them, gave them a shake as he would a rat, and sometimes, if the booby was a wide-awake one, and flew off just as Sam rushed up, he jumped, caught booby's feet, and booby, crying lustily, and pecking viciously, was dragged down. And the unkind manner with which he tossed the cheepers about—one shake and a flick over his shoulder—was certainly very savage; but Sam is in heart the most gentle of dogs, and when I forbade him further cruelty, not another bird did he touch. It was only Kerguelen reminiscences bubbling up and overflowing.

With us all cruising about and guns popping, the bird-population was now thoroughly aroused; the terns rising in a dense cloud as we approached, hiding the sea and sky; while their young were so thickly scattered in the grass that where they were most numerous you could not help kicking them about, although the greater number were able to run quickly. As one walked away the cloud of birds descended bodily to the earth again. Plucky little birds these, giving one the idea that they stick to their babies from parental love, while the boobies give one the notion of doing so from stupidity, keeping to their nests till driven away, when they joined their innumerable kind swiftly flying overhead.

The frigate-birds remained over their rookery, soaring far up, but swooping down occasionally, and then we shot them. Theirs is a beautiful easy flight; the narrow body terminating in long thin bill and tail poised between sharp motionless wings. I have seldom seen a frigate-bird flap its wings. One I watched a long time the other day at sea. At first a speck in the distant sky, then wheeling high over the ship in circles, and again sailing away into the distance with never a movement of the wings, and down below with us there was scarcely any wind, though, doubtless, he had plenty up there in the skies. The "bos'un" or "tropic-birds" flap their wings rapidly, rather like a pigeon's flight; at sea they are the most beautiful birds one sees, as the sun strikes on their snow-white plumage and long streamer tails against the blue sky. We saw no red-tailed ones.

Eleven species of birds we found at Raine Island:—three gannet, two tern (the noddy and another in far greater number), one gull, one tropic-bird, one rail, one frigate-bird, one heron, one turn-stone (in flocks). Fish were swimming about in the shallows among the coral, and two I shot.

After about three hours on shore, we went on board, and anchored again that night on a reef further up the passage. Sailing in these coral seas, within the Great Barrier reef, ships have, of course, to anchor every night. Coral reefs are scattered broadcast—some cropping up above the water, while others, the most dangerous, are always covered. A few of the higher ones have patches of sand and soil on them, covered sparsely with grass or scrub, while those beneath the surface show merely as green or brown patches on the water, or else as a foaming line of breakers, warning one by sight and sound to beware. Under way at daylight next morning we threaded the passage up to Cape York, passing endless reefs and islands; a glorious fresh breeze rattling us merrily up to the anchorage, where we arrived just at dusk.

Once more in Australia! and a horrid country it would be, if it were all like Cape York. The anchorage is in a narrow strait separating a small island from the mainland. Through this strait tides run with the greatest swiftness necessitating our dropping two anchors, and wearing one's life out with anxiety during the night watches, the wind and tide both strong and in opposite directions, the one swinging her this way, the other tugging her in that, the cables jerking and jumping, the anchor palpably dragging, and men had to be kept at the wheel, steering the ship as if she were tearing, a free agent, over the sea instead of being tied to the ground.

Once upon a time the Queensland Government hoped to found a colony here, thinking that from its position in the track of commerce between Australia and the Old World it would become a great port of call—a second Singapore; and to start it they sent some marines to found this new colony. But everything went wrong; the blacks were hostile, and speared the marines whenever practicable; the heat was overpowering, and no settlers were attracted. Two plucky fellows drove a “mob” of cattle one thousand miles through a trackless country from the southern part of the colony, and tried to make a paying “run” of it, but failed; they have now sold their cattle to the Government, and gone off to neighbouring islands on the more profitable occupation of “pearl-shelling.” The marines, or what was left of them, have long been withdrawn. Captain Nares was much employed in a former ship he had on the Australian station, running up to Cape York from Brisbane with provisions of sheep, &c.

A post-master, who is also police superintendent, two or three white subs. under him, a dozen black “troopers,” a missionary of the London Mission, who makes this his head-quarters, and to whom has been given a small steam-pinnace in which he will make runs to New Guinea and find out what he can do there among the Papuans, and some white loafers, who have rigged up tents and shanties

near the beach, alone now form the inhabitants of this "once to be" promising colony. The black troopers are kept to quell any row among surrounding natives, who are constantly fighting among themselves. On these occasions the troopers go and shoot down with great zest any blacks they come across, which also is done by some white pioneers far in the interior. They say that it is a fact, and notorious, that if a cow is speared or stolen, a raid against the blacks takes place, the bag often consisting of one or more of these strange savages—the Australian aboriginal. It is quite inevitable, you know, if white men want the land, if the blacks are hostile, well, then they must be shot—for that is the only way of getting rid of, or making peace with them. These few troopers, being armed with rifles, can do anything they like, and the zeal with which they shoot their black *confrères* shows that they, anyway, have not been taught by nature the axiom, "*mais, point de zèle !*"

Abrupt wooded banks fall into a shallow bay, and at two spots, on grass plateaus, are built the two or three large wooden houses, raised on low piles, where lived once the marines, but now the aforementioned people. These all round are backed by woods, hiding the country behind. A schooner, seized illegally for having natives on board, lies in the bay. The one charm of the place lies in the avi-fauna, rifle-birds, bee-eaters, lorriquets, bower-birds, king-fishers, brush-turkeys, white and black cockatoos, lovely little miniature doves, and many more, of which these are the most conspicuous. On landing we find that of woods pleasant to walk under, of woods perfectly diabolical to struggle through, matted with undergrowth and creepers, and of open undulating country, sprinkled with eucalyptus—the eternal "gum-tree" of Australia—and others, of all these we can take our choice. Everywhere the heat is intense; everywhere a shower-bath falls from your by-this-time-long head of hair; you drip, drip, and slowly melting in this manner, what chance of ever

reaching home in a solid condition? The bare idea damps one alone!

Enormous butterflies fly slowly and high up among the trees, and of these two kinds are notable—one a sky-blue, the other, green, yellow, and black. Hovering among the blossom of particular trees in the woods, these butterflies could usually be found. Many were shot at—they defied butterfly nets—and many were blown to pieces. I shot one of these green and yellow butterflies; waiting till it got some distance off, I fired with number twelve shot, and down it came, a glorious fellow, and not the least injured. Shooting butterflies was to me a new sport; this was the only specimen procured.

A few hundred yards behind the settlement is a camp of aboriginal blacks, and here we saw creatures in the form called human, creatures some of whom were too horrible and degraded to describe as they really were. The camp consisted of several men and boys, two old women, and some young girls—"gins" as they are called in Australia. Each trooper, too, had his gin, and they were all properly dressed, with the exception of one I came across in the woods. They wear long night-gowns, an infinity of white spots on a blue ground being a favourite pattern. These troopers and their gins live in sheds behind the Europeans' houses. Other young gins there were, who belonged to the camp, of which tribe I fancy they all formed a part. All the boys and some of the men were absolutely nothing; others had shirts, and sometimes trousers. Their hair grew in an unkempt shaggy mass, and oh! the energy, the *empressement* with which they clawed and dug their fingers into this matted and dirty mop!

Arranged in a broken circle were great fan-palm leaves, propped up so as to form a screen some two or three feet high; for a roof they had the leaves of the trees. Inside the circle, spread on the ground, were as dirty a lot of blankets as one could well conceive, coarse matting, and a fire smouldering in the centre. I shall not easily forget

the first time I went to their camp ; how I saw something like a black bone protruding beneath the palm-leaf screen ; how I looked behind it, and what I beheld ! Two skeletons covered with black skin, and these were old women ! Too feeble and emaciated to move, except slowly, crawling on all fours, grumbling like some animal as they shovelled into a grass bag the biscuit which we threw them, unclothed, and their eyes—but, enough ! they put strange thoughts in my head, and no wonder that some savages bury their old people alive ! How they move themselves, or are moved, from place to place when they shift their camps, which they have to do perpetually on account of the vermin attracted thereto, I cannot imagine. But the younger women, though ugly, were fat and pleasant-looking enough. Walking about one day, I was attracted by laughter in the woods, and going there, found several girls and boys squatted round a fire, and all, apparently, as blithe as possible. I think the gins go out to forage for food, as they never were in the camp when I went there in the daytime. These natives eat anything and everything ; a boy with me when walking along the beach, picked up sea-tossed wood, knocked out and ate the white teredo-worms.

The history of those dreadful old women is, I believe, that the two brothers who tried to form a cattle "run" here, have taken almost all the tribe away with them pearl-shell-fishing, to an island not far off ; so these old women's belongings having deserted them, they are thrown on the mercies of those left behind, who feed them more or less, but of course they all look after number one first. They moved their camp three times while we were there—some hundred yards each time, and the last time I visited the camp the old women were absent. Government provides them with blankets. Their weapons are small unbarbed spears, which they throw with marvellous precision to a long distance. We saw no boomerangs or bows and arrows among them here. In the wet season,

which lasts three months, they move into low rude huts, made simply of a few long and pliant sticks, their ends stuck in the ground, and over all they throw branches and palm leaves. But, what is odd, they don't prepare for the rainy season before it comes on, and it is only after they have lived under the heavy drip of the foliage above them for some time that they finally make up their minds and rebuild their huts. There were several of these "gunyahs," as they are called, about a mile behind the flourishing town of Somerset—for such is the name of our anchorage and overlooking settlement—on open ground; the skeletons were all right, but the thatching had been torn off. And yet they know perfectly well when the rainy season is coming on, for then the brush-turkeys infallibly begin to lay their eggs, which the natives eagerly seek for as food. So why don't they build their huts in time?

A great many "rifle-birds" were shot, some by the natives, to whom we lent guns with that object, and some by ourselves. You remember the "rifle-bird?" It ought to be one of the birds of paradise, with its splendid velvet-black plumage, metallic green throat, bounded low on the breast by a bronze-green sheeny band; but its beauty is not describable.

I went into the woods one day with a black to try and shoot some. We walked silently along through pleasant woods, over hard ground covered with dead leaves and singularly clear of undergrowth. My guide—a very good fellow—was quite naked, very ugly, and possessed a dirty shock of long matted hair. Two whistles, loud and clear, we suddenly heard. Hist! stop! that is the rifle-bird! And on we stealthily walk in that direction, following for a long time similar notes, which now come repeatedly from different directions. Our black guide imitated their cry—the while standing on one leg, with head bent forward in a strangely animal-like manner—always getting an answer from the birds to his "calls," which he made by

three short, then one long whistle; if that was the full note of the bird we did not hear it—never more than two. After hearing many, though for some time seeing none, we came at last to a clump of fine trees, among whose branches I saw several. But like so many other birds, these, though beautiful when in your hand, yet up in the trees, unless their throats just catch a splash of sunshine, appear as merely black birds. I got no shot after all, they were always a little too far off, though I could have shot two females easily. These rifle-birds fly very fast. The female is coloured somewhat like a thrush, but lighter, and the difference in plumage between them and the males is so great that I should never have guessed they were only the different sexes of the same bird.

In these woods you now and then startle a brush-turkey, which goes smashing loudly away through the bush, and if you come to a large mound, some eight or more feet high by some twenty or more feet in diameter—often completely covered with grass and creepers—know then that they are the nests of these birds. To the uninitiated in this matter, let me state that these birds lay their eggs and then cover them two or three feet with vegetable matter, the fermentation of which hatches the eggs, thus saving them many a weary hour of sitting. Lorriquets in these open glades among the woods are very numerous—flying about in flocks; they are not a very pretty kind; their plumage red, green, and yellow.

I landed one day on the island opposite to shoot quails, but they were scarce, very small, and flew with great quickness; gigantic grasshoppers perpetually jumped up from under foot, looking quite large enough to be quails, and I experienced many false alarms. The whole island is covered with yellow grass, and is otherwise bare, excepting the sea-banks, which are wooded. I was very much startled by a huge lizard, over three feet long, which started up from the grass with a loud rustle. I fired, he was not five yards away, and when the dust and smoke

cleared off I saw no result of my shot. He must have popped into a hole with which the ground hereabout was pitted. A green back, yellow belly, head high in air, and great thick legs. I saw another, stuffed, in a house which was three and a half feet long. We hauled the seine net in a sandy bay on the opposite side of this island, and got capital hauls of fish. On this shore we saw a large red patch, which when we came near to it we found to be an army of red crabs, which moved slowly off as one crab—a very strange sight.

The tree-ants at Cape York are too awful. My first experience of them was while struggling through undergrowth in a wood. Suddenly my ears and neck were pierced by a dozen red-hot pincers, each pincer nipping its own little piece of flesh, it seemed to me. I turned and fled—when out of the bush threw down my gun and pith helmet, rudely slapped my face and neck, and with my fingers made chaos of my hair. For about two minutes I was really in great pain, and the cause of it all was a largish green ant. Having recovered from this attack, I soon after shot two tiny doves from off a tree. I went up, stooped and picked them up from the ground, and again was assailed more hotly than before. The doves were chucked away, and again I went through the slapping and brushing performance; Sam looking at me the while as if I were a perfect idiot, which for the time being indeed I was. The sensation is so sudden, and momentarily so painful, as to startle one out of all composure and dignity of mien. These ants live in the trees and bushes, and in the last case must have been shaken off by the shot, and fell on me in two senses of the word.

There are also here termites, which build with the soil great buttressed towers, ten and twelve feet high, their tops rising in two or three pinnacles, the main tower flanked by smaller ones the whole way up. These, in some places, are built about close together in numbers, and although I have not mentioned them before, they are the prevailing feature

of what open country there is about Cape York, and are the first peculiarity which strikes your eye on entering Torres Straits, and an ugly peculiarity it is. One or two "wallabies" (small kangaroos) were seen here. I shot on the island a large "thick-knee" and a cuckoo-pheasant with a splendid tail.

A steamer from Java came in one day, having on board a number of gold-diggers who had "rushed" to new gold-fields in the north-west of Australia, but the field was too crowded, and they were returning with empty pockets. If, by any possibility, I have given you an idea that romance is to be found at Cape York, I beg you not to be deceived. It is the most horrible hole, and the heat stifling—so hot at some seasons that men on board men-of-war have been known to faint beneath double awnings. On the shores of the island were oysters, delicious ones, though small; and in some caves we caught pretty chestnut-coloured little bats. On another island, uninhabited, twenty miles to the westward, where I went in the steam-pinnace for dredging purposes, we found oysters as large as saucers. My eyes, you may be sure, became of the same dimensions, and I ate my fill. Here, too, we shot some small pigeons, and saw a flock of "Torres Straits pigeons," beautiful birds with white and black plumage.

We left Cape York on Sept. the 8th, anchoring that night off this oyster-island; where, by the way, king-fishers of a large blue kind were common on the shore. Next morning we went on our way, passed close to a mail-steamer, Brisbane bound, from which we got some papers, and then the ship hove to off, and we landed on, Booby Island—the westernmost island ending this maze of reefs and islands through which we have been steering. A small hilly island, covered with scrub and boobies *ad lib.* We found salt and preserved provisions which this ship had left three years ago on her way home from Australia. Before steamers ran this route, ships used to leave letters in a hut here to be picked up by any passing ship; we found a

letter left only a short time ago by a merchant ship, recommending to the attention of the Queensland Government the building of a lighthouse on a certain reef. A queer place to leave this sort of thing, where it might not have been picked up for years!

Between New Zealand and the Fijis we trawled and dredged frequently, chiefly in the shallow waters around the groups of islands which we passed, in depths of from 3 to 600 fms. Between the Fijis and the New Hebrides the bottom temperatures were all 35° , proving that this sea is surrounded by a shallow bank, cutting it off from the general oceanic flow, and so no colder water than that which lies at the depth (whatever it may be) of this ridge can enter in. As on the other side of the New Hebrides we had found the bottom temp. at a depth of 1,400 fms., 35° , so it is concluded that that is the greatest depth of the ridge surrounding this hole, whose waters below that depth are comparatively stagnant. On the other hand, 250 miles to the south of Tongatabu the bottom temp. at 2,900 fms. was 32.9° —we therefore know that that part of the Pacific is open to a great depth to the Antarctic inflow of water.

Our capture of a living "pearly nautilus," was a red-letter day for all naturalists. There are three species of the genus *Nautilus*—*N. pompilius*, *N. macromphalus*, and *N. umbilicatus*. The first is common, the second is rarer, and the third rarer still. Aristotle was the first to describe the animal, followed by Rumphius at the beginning of the 18th century. No further specimen was obtained in modern times till the year 1829, when one was picked up floating on the surface of the sea near the New Hebrides. "How vividly the bright moment recurs to my remembrance, when this long-sought for prize was quivering within my grasp! Thus, after lapse of nearly a century, the animal of the Pearly Nautilus was recovered to science,"—says the triumphant discoverer, Dr. Bennett. From this specimen Prof. Owen described the animal at length. The shell we all know well: it is heavy, dense, chambered, and marked transversely by reddish-brown bands. It has an outer opaque testaceous substance, which, on being removed, displays the beautiful pearly structure beneath. The animal feeds on the bottom, carrying its shell like a snail, and living principally on crustaceans. It has the power of rising, and floating to the surface, when it lies in a reverse position to what it does usually at the bottom. How the animal arrives at this power of rising is open to conjecture, but it is most probably produced by the animal (which only occupies the upper cavity) creating a partial vacuum in the other—empty—chambers of its shell. How it sinks at will, is, too, doubtful—whether by simply reversing its position of flotation, or by forcing water into its system, and so compressing the air in the chambered portion, when it becomes heavier than the surrounding medium, and sinks.

Eminent conchologists have laughed at the idea of the Nautilus rising from the bottom *at will*—calling the idea "a poetical speculation." With Rumphius they think that the shell is driven up (involuntarily) by waves caused by storms; and they have come to the conclusion that the Nautilus cannot live at a greater depth than 30 fms. But this specimen which we procured came from a depth of 300 fms.—a far greater depth than the agitation of the waves can reach. Whatever may be the reason of their rising to the surface, there can be no doubt that the nautili are designed to live, and find their food, at the bottom of the sea.

CHAPTER IV.

CAPE YORK TO CHINA.

FROM Torres Straits we stretched across the Arafura Sea, 400 miles to the Arru Islands. A very shallow sea—under 100 fms. the whole distance. Every day we trawled, but not with such brilliant results as one would have expected, nothing very wonderful coming up, I believe. For two consecutive days the surface of the sea was covered with minute yellow algæ, streaked by the wind in long lines as far as one could see.

On Sept. 14th we were off the southern island, and on the 16th we anchored off Dobbo, having sailed 100 miles close along the coast, a low and almost unvarying line of dense forest rising from the sea like a wall. Here and there white coral cliffs and rolling grass land above reminded us—of all places in the world—of England. So close did we sail to the land, that, one night, while we were slipping quietly along under full sail in almost a calm, the water suddenly shoaled, and we had to drop anchor in a hurry, and furl the sails afterwards. Daylight showed us that we had got on to a shallow patch, on which the water broke at one spot close by; and we again nearly touched while getting away the next morning under steam. Of course these islands are not surveyed.

Dobbo is a village built on an island at the north-west of the close-lying group; opposite, and close to it, is another island—Wokan; and between these, off a sandy spit on which the village is built, we anchored. A queer-

looking place; along the edges of the sandy tongue, jutting out from the woods, Malay *prahus* are hauled up high and dry in numbers, and canoes too, large and small, crowded with dusky Papuans; behind them stands a row of high-gabled brown houses, backed by trees.

From the anchorage the view all round is of woods, an endless wall of green, unbroken except where we entered, springing straight from the coral beach, and receding far away in the distance, completely land-locking, to all appearance, a large stretch of water. All day long strange shifting lights play on this distant green wall and sea; all day long flocks of lorriquets fly overhead from island to island, chattering noisily; butterflies of all beautiful colours come dancing off to the ship, and there finding nothing sweet, nothing pleasant, dodge my cap, and dance airily back to their woods: happy butterflies—unhappy sailor!

Canoes paddled by Indians stop as they pass, to stare wonderingly at the great English ship, or slip quickly by under their queer-shaped sails of matted grass; around us fish are jumping and splashing, chasing in the blue-shadowed water under our stern, shoals of unfortunate little fish, which jostled and darted, dispersed and rallied again as their big enemies flashed like streaks of blue lightning among them. Looking through a telescope you can see among the branches of the trees white cockatoos, pigeons, green parrots, lorriquets, and other birds too small to identify in the distance, while flocks of tern are flying about over the water, diving and capping the fish-stakes on the shore. This is what you would see; and what you would feel is a vertical sun pouring down, boiling you to a state most limp and pitiable. Melting wax figures dressed in blotting-paper—this describes accurately enough the state we have been lately in.

Soon after we anchored, canoe-boats came paddling off, with tomtoms beating, flags flying, and the paddlers singing. Umbrellas—Eastern signs of state—warned us that

swells were approaching ; and presently there came up the side three Malay officials, gorgeously attired in black silk coats with gold-embroidered cuffs and collars, waistcoats,—or garments answering thereto—*à merveille*, loose black or white trousers, and on their close-cropped heads the absurd little Malay caps ; they were passed on to the captain, and appeared very much thunderstruck and stupid ; the headswell with an always open, cod-like mouth, displaying the ugly red stain of the betel-nut inside his lips.

Then with more flags, more singing, and more tomtom beating, came other canoes, and in them individuals dressed in the garments of Europe—to wit, seedy black-tail coats, trousers, and lank chimney-pot hats, while in their hands they carried, or were carried by their attendants, sticks with large silver heads. They proved to be the schoolmasters of a further-away village, who having seen us passing, now came to do us honour. The sticks are badges of authority given them by the Dutch, and the villages they live in are more or less Christianized and civilized. A mighty odd assemblage they all formed—the Malay officials, boatmen, and the numerous Dutch-Malay schoolmasters—and a very unintelligible one ; two of our officers, one speaking a little Malay, and the other German, alone saving us from the anarchy of Babel.

Landing at the end of the sand-spit, and passing between the bows of the hauled-up prahus, we are in the village, the road much blocked at first with busy boat and house-building operations. The one narrow street soon splits into two, where a central row of houses comes in. A shaky, dirty-looking lot of houses they are, tenanted by Malays and Chinese. Although this is not now the trading season, yet the village seems pretty full, Malays, Chinese, Indians, children, yellow-crested cockatoos, red and green parrots, a cassowary, a wallaby, ducks, and fowls,—the cocks being of the fighting genus,—and smells abundant everywhere ; the distinguishing Malay odour being quite unique, and unmistakable when one has once smelt it. The houses are

long, two-storied sheds; the back of the ground floor is used as a store, and the front they live in, or make a shop of. By a bamboo ladder one mounts to the second floor, where they live. The flooring is of bamboo, as are usually the walls and roofs, both thatched with the universal Eastern thatching, the leaves of the nipa-palm, which are bent along the midrib, and sewn over a stick. This thatching turns to a dirty brown colour, and as the whole house is thatched, so is the whole appearance dirty. There is an uncomfortable feeling to the inexperienced in walking over these split bamboo floors, for they creak under your weight, and look very like breaking away altogether. The Malay swell who came on board had a most respectable second floor, carpeted with mats, and plenty of light coming from holes cut in the thatched wall. His wives were visible through openings in a partition, until they saw the blighting glance of a Christian fixed on them, when they vanished. Awfully particular they were about their women here, and except when they peeped through the windows of the projecting second floors, we never saw a Malay woman; which was no great loss, however. An old Malay merchant had also a very good house, and a fine collection of creases and pearls.

On a mat, outside a Chinaman's door, being dried in the sun, were a number of the "great" birds of paradise, prepared, as the natives do here, with the cleaned bodies left in the skin and dried, which does not improve them for stuffing purposes, as the skins become very shrunken. Here was visible evidence that we were in the land of the paradise-bird, and very beautiful they looked, their long silky golden plumes, bright chocolate-coloured wings and bodies, and emerald throats, in the sun-light. Ten shillings each was asked for them.

Behind the village were a few coco-palms, noticeable in these islands by their general absence, and some graves, oblong stone troughs, surrounded by light bamboo railings; inside the trough was a basin of comestibles to support a

defunct Malay in his flight to the other world. We then made a feeble attempt to get through the woods and shoot birds, but the wood was too thick, the path obscured by shrubbery, and the heat too great for anything but a salamander, so we turned and strolled along the beach, bordered among other trees, with magnificent casuarina, from which these islands are named by the native name "arru." Off them we shot lorriquets, the same, or nearly, as those at Cape York; and so, bullying hermit-crabs,—which, ensconced in land and sea shells, were crawling on the shore,—smoking, lying down in shadow out of that fierce sun, drinking glorious "Corpse revivers" in the refreshing breeze, time passed pleasantly away till the cool evening, when we returned to the village, Sam exciting wonder and consternation among the men and children, the former trying to be dignified, and oh, no! not frightened—but failing,—and the children shrieking, laughing, and climbing up the posts on to the roofs of the houses. The joke of setting Sam at them was much enjoyed by the outsiders, who, however, in their turn, fled as Sam bounded about. A merry lot of brats these youngsters are, and some of them very good-looking, particularly two—the old Malay merchant's son and another. Of the other sex, even the tiniest specimen, there was nothing visible.

But the general mob of Malays here are not pleasant-looking people, the hideous habit of chewing betel-nut making their mouths, in many cases, really sickening to look on. It dyes the gums and lips a brick red, and blackens the teeth, besides eating them away, till eventually nothing but black stumps are left. The lime which they eat with it (in a different form) partly causes this, I believe. But they say a betel-nut chewer does not know what toothache means: even the tiny piccanninies' teeth sometimes betray them as having chewed.

The dress of these lower Malay classes is a loose pair of trousers, and a coloured handkerchief wound round the head; or else merely a waist-cloth, which is the boys

dress—either that or nothing. The upper ten—some half-dozen in Dobbo at this time—add a long jacket of good material, and when they dress in their best they are very wonderful. The old merchant's son, who was usually dressed in trousers with a red *serape* wound picturesquely round his naked body, came off to the ship one day, an umbrella held over him, and paddled by his Papuan slaves, attired in a most gorgeous yellow garment, his long, black hair hanging down to below the shoulders, oiled, curled, and wavy; and really he looked extremely handsome.

The Malays' attempts at moustache adornment are very ludicrous; one man only had a decent moustache, but the others could only grow about five or six easily countable hairs on each side: these, however, grew long. The Chinese are a gaunt, yellow lot of men, bearing in their skeleton appearance the palpable evidence of opium-smoking. In the store of the man from whom we bought paradise-birds we were regaled by his wife—neither young nor pretty—with a weak infusion of Chinaman's tea. They were all pleasant and civil, much interested in Sam, and drawing water for him at the well. In this store was a quantity of gaily-coloured calico, handkerchiefs, tortoiseshell—poor, thin stuff, for which they asked 15s. a pound,—cutlery, silver earrings—much worn by the natives,—pearls, for which they asked an absurd price, and, last, but not least in the trade with the natives, who shoot the paradise-birds, dive for the pearl-oyster and pearl-shells, and catch the turtle, large cases full of bottles of arrack.

In a den on one side they were smoking opium, sprawling on their beds, but seemingly stopping short of the happy, comatose state. In one place they were gambling, the bankers being a spectacled Chinaman, whose quietly pleasant and imperturbable face was a study, and a Malay. The table was a mat, spread on the ground in the street, and round it were the players, squatting on their heels, staking Dutch doits. They were very apathetic, one man, who repeatedly won, alone showing the least excitement.

The cassowary stalked solemnly about, curtsying and sidling away as Sam sniffed at him. White cockatoos, purple and red, and green parrots, were being carried in hand, or sat on perches outside the doors.

The island opposite Dobbo was our first shooting-ground. The steam-pinnacle landed us at a village about three miles away, where we procured guides readily. This village was partly Malay, partly Indian, both races living in houses raised high above the ground on posts. From here we sallied into the woods, made easy by paths. The first party came back with a specimen of the "great" bird of paradise, a young male without plumes; also with a "king" bird of paradise, a most beautiful little creature. These were both shot by the same gun, but two other fellows saw (or thought so) several unplumed "great" birds together on a tree rather bare of foliage, but, of course, these two had no gun. On this island we landed several times, and here, as everywhere, heard plenty of "goby-gobies," as the little king bird is called by the natives. But hearing was one thing and seeing another. Their note is a low, plaintive cry, or rather whistle. Wherever we landed they seemed to be pretty numerous, though comparatively few were shot. Behind the village of Dobbo, deep in the woods, there was a considerable extent of marshy ground, and here one might, as some of us did, stand for a long time, hearing them all round, seeing them sometimes, and yet we were lucky if we got any.

The vegetation of these Arru woods is extremely lovely, palms and tree-ferns mingling with trees whose branches are laden with parasites, orchids, and ferns, and festooned with lianas, rattans, and creepers of every kind; while along the shores tall casuarina, pandanus palms, and mangrove are conspicuous, standing out from the dense screen of foliage.

Both in the deep shadow of the woods, and in the sunshine on the shore, butterflies, the most gorgeous and varied, and of all sizes—from huge ornithoptera to tiny blue and

yellow gems,—fly rapidly in the air, or flicker hurriedly through the lower foliage; scarlet dragon-flies—spirits of deceased cardinals, but no! this is not purgatory—come staring motionless at you, then with one jerk, go yards away; dull-coloured little lizards glide rustling across the path; snowy cockatoos scream harshly, and some have shockingly dirtied their plumage; and listen! *wauk, wauk!* there's the "great" bird of paradise; *whreeee!* there's the little "king" bird; there booms low the note of a pigeon; there chatter a flock of lorriquets; and on the dark coral shores blue kingfishers and lonely grey herons are on the look out for fish.

In the steam-pinnace one day we went about 20 miles to the S.E. of Dobbo, to where a clean-cut narrow strait divides the island of Wokan from Wunambai. We steamed about a mile up the strait, which gradually narrowed. Along both sides we here and there saw the native huts perched high up on poles, with patches of sugar-cane and bananas around them. It was a pretty scene; the narrow band of water dividing the two banks of rich vegetation, the odd-looking huts peeping out from beds of foliage, and the dusky natives, wondering no doubt at the apparition of a small steamer in their waters, running along the beach. We landed near two huts, from which came out to meet us a number of good-looking young natives, all wearing the usual waist-cloth, or *sarong* of their favourite colour—red; red handkerchiefs round their heads, armlets of prettily strung beads round their arms, and silver earrings in their ears; a clean-skinned, small, well-knit lot of fellows. They were most anxious to guide us at once into the woods, and carry our guns and ammunition.

Good paths led through high but not very thick woods, through cultivated patches of tall sugar-cane, over much rougher ground than we had yet come across in these islands, and past now and then by a native hut. Soon we came to an open spot, where the undergrowth had been cleared away, leaving a few high trees, bare of foliage

among whose top branches large swifts and lorriquets were flying, which we vainly tried to shoot, when suddenly there flew and alighted on a branch a chocolate-coloured bird; some one fired, and down it came, a young male of the "great" bird of paradise, but again without plumes, and, once for all, I had better say here that we did not see one bird in full dress the whole time we were at Arru. During a slow walk of two or three hours I saw several, always high up among the branches, but, always hoping to see a plumed bird, I did not fire at them. High up in a tree I saw the leaf-roof beneath which the natives hide while watching for the arrival of the paradise-birds, shooting them, one by one, with the silent, blunt-headed arrow.

I saw a few "goby-gobies" and shot one. They fly quickly among the lower branches; and, of course, in the woods, unless they remain for some time near one spot and close by you, their rare beauty is hardly recognised. Their colouring is exquisite; snow-white breast, green band around the throat, crimson-velvet plumage, two stiff, bare shafts falling down from the tail, ending in flat spirals, coloured metallic green, and under the wings are two emerald fan-shaped tufts of feathers, visible when the wings are outstretched.

But in these dark woods there is always disappointment in seeing them, for unless a splash of sunlight happens to fall on their brilliant plumage, you can only make out a small red bird: and the common cardinal-bird of America is more beautiful as it is seen in the woods than is this really infinitely more beautiful little king bird of paradise. We saw also large fruit-pigeons, green parrots, and a very common large flycatcher, which makes a tremendous noise with its clear, ringing notes.

I went into several huts which are all built on a number of slight bamboo or other supports; the roofs, low pitched, thatched, with long projecting eaves; the walls made of rough boarding or mats, but not built up to the eaves, so from inside one can, from almost a sitting position, look

outside. The huts are all very large, and as you walk past them a number of heads gaze down on you curiously, and if you look in at the door there is a scattering away of frightened piccaninnies to the further end. Two or three steps up a broad bamboo ladder, and we are in a Papuan home; the flooring is made of bamboo, split into laths, every stick of which appears loose, and I fairly broke one altogether with my heel. Low boarding, about a foot high, divides the floor into compartments; the central one, into which we step by a ladder through a hole in the floor, is common, and the rest belong to different families, who thus all live under one roof.

In this hut there were seven or eight compartments, women and children in all of them, the former cooking, or nursing babies. At the further end of the common compartment, the bamboo flooring was raised a foot, and on this—first placing a mat there—they asked us to sit; above was a shutter in the roof, open now for light and air, but which they can close when wanted. One or two of the young women were surprisingly good-looking. Their hair is worn long, in a frizzly mop all round the head, or gathered back and tied behind in loose chignon fashion. They wore nothing but the *sarong*, or short matted kilts; they were very shy and very plump, these young women. Their fires were burning on clay beds in movable boxes. The older men are ugly and very dark, wearing their hair in stiff, shaggy black mops, or gathered back and tied like the women's, or else cut short like many of the young fellows'. The bambinos were fat, naked little animals, and seemed well cared for. Overhead, resting across the light wood-work, were numbers of bows and arrows, the latter made of long thick reeds or bamboo, ornamentally feathered with red and green parrot feathers, and barbed with iron or bone. Hanging above the door was a row of pig's jaws. Having nothing else in my pocket but a ten-shilling gold-piece, I offered it to a native for a fine set of bow and

arrows, but he did not the least seem to know the meaning or value of the gold, and refused.

The sugar-cane patches were all fenced in, and everybody was eating the cane, paring off the outside with the heavy choppers which they all wear round their waists. This cane, with the pigs and bananas, is what, doubtless, keeps them in such good condition; a wonderful advance in intellect and civilization they show ahead of those horrid Australian Blacks!

Coming down to the beach again, I found two women getting into a canoe, and these, certainly, were very ugly and lean; hard work and no play soon make these unfortunate women look very old. The beach was hard dark coral, full of shallow pools not sweetly smelling, and fringed with mangrove bushes. Gradually we all assembled again on the shore, with a result of several king birds, two great birds of paradise, and many other birds. Canoes had arrived from neighbouring huts to look at us, and the little pinnacle was surrounded with them.

While waiting, I went into a hut close above us, built on the top of a mound cropping out from a wooded precipitous bank in rear, up which one got by means of the trunk of a tree, cut into notches—a most abominable and slippery entrance into a house, altogether. This was a very large hut, circular in shape, propped upon posts as usual, and swarming with natives. There were a great many young women among them, and I again declare they were quite pretty, though it may have been by contrast only with the old ones. Of course they are very dark, have broad snub noses, rather thick lips, good round eyes, very white teeth, wear mat girdles, &c.

Now don't accuse me of unjust pæans; if you people at home *will* send sailors away, so that for months they see not the face of a white woman, and for the general lack of civilized society become like bears, 'tis your fault, and you must be patient if we, like bears, are contented with whatever society we come across. And

after all, do you not all talk when some particular beauty comes "out" at home? Why should not I then, if I come across one in a tropical forest, or in a savage's hut?

I bought a number of bows and arrows for silver money, my perception in only buying good arrows, and scornfully rejecting proffered old or bad ones, amusing the natives much. They had many tame red parrots, one of which was brought on board. Among the arrows I got, was a blunt-headed one with which they shoot the birds of paradise, and, by the way, I hear that a blunt-headed arrow was bought at Api. The children, bright-looking and pretty, were practising on the shore with small bows and arrows. There is an odd mixture among the natives here, some being much lighter coloured and with more wavy hair than others.

I must not forget to tell you that one young lady, whom we met in the woods, was principally dressed in beads, pretty loops about her throat and ears and over her hair; armlets, anklets, and bracelets also of beads.

It was an odd scene this, and a new one,—our pinnace surrounded with canoes, and others passing over the intervening ten yards between her and the shore, which was crowded with these pleasant natives; the odd-looking hut, perched half-way up the wooded bank; the beautiful birds that were being brought out of the game bags—paradise-birds, both "great" and "king," graculæ, parrots, lorriquets, pigeons, &c. And then in the twilight and darkness we steamed for three hours back to the ship. The Malays here call the natives "pigs," and a native chief they call a "Pig-Rajah." Another party came here the next day, and slept in the boat that night. They got two "great" birds of paradise, which had the green throat, yellow head, and two bare shafts, but the golden plumes were wanting. Somebody thought they saw one in full plumage, but was surely labouring under an optical delusion?

Wallace says the birds are in plumage this month, so, if they are, it is odd that among the very many we saw

between us, not one of them should have been a three-year-old bird, before which age they don't get their full plumage. But the chances appear in favour of their not being in full plumage yet, and what would seem to prove it is these two birds that were got in half plumage (moulting, perhaps, though). They must all come into full dress at the same time, or else the late ones would have a very poor chance with the other sex against their brilliant and full-plumaged rivals. The little king bird seems to be in full plumage all the year round. We got three different kinds of parrots, the speckled loriquet, a large green parrot with blue feathers in the wings, and a tiny short-tailed green parroquet.

We saw several "cus-cus," queer little animals, crouching close along a branch, which they grasp with their bare-ended prehensile tails; their fur is very thick, coloured white with black markings. Flying foxes are common, flying up from the ground, and hanging to the branches.

We bought the small cassowary that stalked about the village, and kept it for some time on board, but it smelt too much to be interesting, and was killed. Have you ever seen a cassowary sit down? They go down backwards and sit on their knees. We also got a wallaby—a pretty beast, but ship-board life made him so frightfully thin that he, too, was killed.

The great trade in this Eastern world is tortoise-shell, pearl-shells, pearls, and trepang, or *bêche-de-mer*, which in soup is most delicious. In Dobbo, at present, nothing is going on; the same day on which we arrived the two last trading prahus of the season, which we passed coming in, having sailed. But there seems to be a much larger fixed population in the village now than there was in Wallace's time, and on the beach a fine large prahu is building, and many other smaller ones being repaired, while numbers of men are working at timber, cutting it deftly into shape with their only tool—a small adze.

Large and small Papuan canoes constantly come and go full of natives; the larger ones, belonging to the back and southern islands, being often covered with roofs, the materials used being so light that any amount of housing scarcely weighs anything at all. One of these, full of men, came alongside one day, and, as far as noise was concerned, took possession of the ship. Such loud and energetic gabbling I never heard! They were very excited and interested in everything they saw, and with a stick measured the whole length of the upper deck from taffrail to bowsprit; others watched the carpenters repairing a boat, and begged for an awl; the young fellows climbed actively up the rigging, and stood triumphantly on the royal yard, shouting, gesticulating, and laughing with delight. They were really great fun, and what stories they will tell of the "great canoe" when they get back to their homes! There was a tiny little girl in the canoe with long black hair, whom her father fondled very affectionately. They were all chewing betel-nut in some form or other, rolling the nut between the teeth and lips, or enclosing the powdered nut, gambir, lime, and tobacco in a peppery leaf and then eating it.

I did not buy any paradise-birds, for of things stuffed I have a hatred, though if I had shot a plumed one that would have been different; and trust me not to encourage the barbarisms of female adornment!

We got a fine turtle given us, which our cook—as he does everything he lays his sacrilegious hands upon—spoilt entirely. There was no fruit here excepting bad bananas, but plenty of fowls and eggs at exorbitant prices, and pigs, which the Chinamen had; for they without pigs are as impossible as the Malay without his fowls, or the Englishman without his dog.

A Dutch trading schooner came in one day from a cruise about the group, whose upper deck was crowded with lories belonging to the crew, but they would not sell some rare

beauties we wanted to buy, which came from small islands off the eastern point of Java.

There are many Papuan slaves in Dobbo, boys and men; the latter often working off some debt which they owe the Malay merchants, and the former looking happy, and not wishing to go to their homes.

And so we leave the Arru Islands, having, and yet not having, seen the "great" bird of paradise, which is very provoking; a little later or earlier, and we might have seen them in full plumage.

From Arru we went to the "Ké" Islands, about 150 miles to the westward of Arru. We left Dobbo on Sept. 23rd, and when only a few miles distant sounded in 800 fms., a sudden dip from the shallow water over which we had sailed to the east of Arru. We got a rich haul of the trawl from this depth. Next morning, Great Ké Island was ahead, a current during the night having drifted us 20 miles to the southward; it is a long narrow island, formed of a ridge of wooded mountains. While we were sailing with a light breeze to the northward up this 20 miles of coast which we had "lost" during the night, several large canoe-boats came off to us from villages visible on the shore—a good long paddle away. As usual they came with many flags flying, with tomtoms beating, and paddlers singing, knocking their paddles against the sides of the canoe with a double knock at each stroke; each boat crowded with Papuans and Malays, the former being the paddlers, and the latter the Rajah of the village and suite. An old shrivelled fellow this Rajah was, dressed in loose pink trousers and long blue coat. He had a document, setting forth that *In Namen des Königs* he had a right to be considered a swell, or something to that effect; he also had some skin disease, and his hands were blotched with yellow.

The Papuans were the most unfavourable specimens we have seen, almost all with a skin disease, and their hair worn in an untidy frizzled mop. Garrulous and intensely

noisy, as the canoes crowded alongside, they were quiet enough on board, all gazing enraptured at the little donkey-engine which was going on deck. After the contents of three large canoes had emptied themselves on our decks we had quite enough of both Malays and Papuans, and sent some canoes away without allowing their crews on board, which, after their long paddle, was perhaps rather hard lines.

Their boats were the same as some we saw at Dobbo, shallow and broad amidships, narrowing quickly at bow and stern, both rising in a high peak, ornamented with tufts of cassowary feathers, shells, and flags. The paddlers sit close together along the sides, paddling rapidly and deeply, spurting up water behind at each stroke. The Rajah and others sit on a bamboo staging, where also the Malay paddlers keep their boxes of light clothing, which they don before coming on board, but the Papuans never wear more than the waist-cloth.

Here and there along the shore, at the foot of the hills, we saw the coco-groves surrounding the villages, and strips of white sandy beach. Little Ké Island—our destination—is to the westward of this one and close by, but, unlike Great Ké, is flat.

Just at dusk we anchored off a village, but some distance from the shore, the water being shallow. Soon we were again invaded with Malays and Papuans from this and another village; the Rajahs—grave and reverend signiors—come to call and discover what on earth the big ship had come for; while the young Indians, cleaner skinned here, at once commenced climbing up the rigging, and “lying out” on the royal yard, as if they had been accustomed to do it all their lives. Climbing trees, I suppose, gives them this strange assurance in high places, for straddling across a stick at that height is what few land-lubbers would care to do.

Then we had a grand dance on the upper deck, a number of tomtoms being brought up from the canoes, to the

monotonous tapping of which two young Malays and a tiny Papuan boy danced, while the rest gathered around. The Malays were dressed in coloured trousers and coats, and the little Indian with a waist-cloth. The dances were slow and of a tiresome sameness throughout, arms waving, and body turning gracefully enough about on heel and toe; and between the two—like a small black flea—the naked little brat hopped slowly, and was the most amusing of the three.

At daylight the next morning we shifted our anchorage to another about four miles further down, between scattered islands, and within stone-throw of the shore.

These islands are almost flat—all raised coral, and again we are surrounded by high green woods. Opposite to us is a village, backed and flanked by a grove of tall coco-palms; a pier of coral blocks is built out on the beach; a fine banyan-tree throws black shadow over a plot of grass between the village and the shore, and on another island we see a village with the inevitable coco-grove.

One of the naturalists had walked from the village off which we anchored last night, across the land to this one, and came on board with some beautiful lories, and a large nutmeg pigeon which he had shot. Heigh-oh! for the "pot," and we are off to shoot some.

With a Papuan boy as guide and ammunition holder, I started off, first walking some way along the sandy beach, and then I struck into the woods, led through by excellent paths, hard and dry, the honey-combed coral cropping up now and then above the rich soil; for here, in the middle of the woods, you walk over what was not long ago a submerged coral reef. The under-growth was alive with wonderful insects, great scarlet-coloured beetles, and innumerable others, some ugly and dark, some brilliant and beautiful, all strange; little green lizards with bright blue tails slipped among the drooping leaves, and great, ugly, brown beasts started from under-foot, sprung up the bole of a tree, ran along a branch, then stopped looking for

your next move, which was gun to shoulder,—and the lizard's? his next a rapid one to the ground; flocks of the most gorgeous lories we have yet seen, with bright crimson plumage and a little blue on the wings, were chattering in hundreds among the foliage of low trees, flying off screaming in crimson confusion when startled. Another kind—and not nearly so pretty or so common—was green, with a dirty yellow head, and I also saw fly quickly past me a large red parrot, the same kind I suspect as that we bought at Dobbo. But none of these did I want to shoot; and at last I made my guides (two Malays had joined me) understand that it was pigeons only that I wanted. Trying to imitate the note of a pigeon, I was very energetic, impressing over and over again upon them that I wanted *bourr-ourr*.

But I found that I was quite wrong, and ought to have imitated the cry of a raven, for this, to my surprise, is the noise they make. And soon we came to a place where they were in plenty. They are splendid birds, very large, with white breasts, metallic blue-green wings, backs and tails, coral-pink feet, and yellow eyes; they weigh two good pounds—more than a large pheasant, I think? They were very fine and easy shooting, sitting on the branches of high "kanary" and bread-fruit trees, both growing here magnificently. But these pigeons want large shot, and in spite of their sitting still, calmly and amiably—booming gently the while—looking at you while you take aim, yet they are hard to get; for if they do fall they often stick among the branches, and possess such wonderful vitality that though they may be so badly hit that they fall over, yet they will cling with their feet, hanging head down for a long time. One of these my boy went after, climbing up the tree with splendid agility, but coming down again with still greater activity, and in a mighty hurry, covered with the same diabolical tree-ants as those that tortured me at Cape York. I could not help laughing at him as he

rubbed them off his naked body, saying to me *gee-gee gee-gee!*

I bagged three brace of pigeon, with an expenditure of treble that number of cartridges. My guides had marvellous sight, sometimes for quite five minutes pointing vehemently up at a tree, and saying excitedly *Pisang*, but for the life of me I could see no pigeon—very provoking, and my guides so evidently disgusted at me! but then, all of a sudden, I saw it too, quite plainly.

It was delightful strolling about under these glorious trees, blazing away at what was to be my dinner. The pigeons were eating the kanary nut,—enclosed within a softish rind—inside which is a very good kernel, much eaten by the inhabitants of these islands; the trees grow very tall and straight, with buttressed stems. The birds were probably swallowing the nuts whole; but it is the hard black nut inside which the black cockatoo—which we saw and got one specimen of at Arru—cracks with such wonderful cunning, boring out the kernel with its sharp upper mandible. Besides their ordinary raven-like cry these pigeons also utter a loud deep boom.

Some two miles inland we came to low walls of coral, enclosing what were once evidently plantations. In some were still bananas and cocos, but they looked like once well-cultivated plantations which now are neglected. We know nothing of the history of these islands, and so cannot account for this apparent decay in industry.

In these woods were large handsome butterflies, and small birds—honey-suckers, and a "glossy starling" with black-blue plumage, one of which was found, caught and helpless—exhausted with struggling, in the strong web of a large spider; whether the spider would have attacked it, or eaten it when dead, who can tell? These webs are immensely strong, and so glutinous that I doubt if this bird, which was the size of a large linnet, would have been able to fly even if it had got out of the web. I know that

I have been much exasperated with the sticky stuff on my clothes.

The village is small, and most of the houses are built inside what was once a Dutch fort, now merely a thick wall inclosing a large square. The houses are built in Malay fashion, on posts, with low-pitched, thatched roofs, and walls of rough boarding or bamboo, having large doors and small windows, their whole appearance looking shaky and dirty. Not a woman was to be seen, and the men appear of a mongrel breed, but the youngsters were good-looking. From the quantity of calico worn, everybody nearly wearing good stuff, one would suppose there was a good deal of trade here; and the pier, which is a strong solid work, must have cost much time and labour, but perhaps it was built long ago by the Dutch. Inside the square was a large mosque, with the usual curved and tapering roof: they were very particular as to our not going in, and ostentatiously obstructed the doorway. Sam, too, they were in a state of mind about, partly I think from the "unclean beast" idea of the Mohammedans, a fear which their curiosity about such a big dog sometimes overcomes. Sam an unclean beast? Then so are they! Though Sam is not a very big dog, they have evidently never seen one before so large.

The Ké islanders are famous for boat-building, and a large prahu is being built on the shore. They are made without one single nail, and sold to traders.

We only stayed at Ké Island that one day, which was a misfortune, seeing that as a natural history field, it is almost unknown, to say nothing of the pigeon-shooting; which pigeons, by the way, were very good, although the heat of the weather forced us to eat them in rather too tough a condition. I thought this island quite delightful: the woods, the crimson lories, the butterflies, insects, parrots, and other birds were all beautiful and strange. There are no paradise-birds here.

The next day we were off, steering between outlying

islands, all inaccurately placed, or not at all, on the chart, some of them hilly, some flat as a board, and between these islands, in 129 fms., we got our first really good haul of large crinoids, a grand haul indeed, rejoicing the heart of science. On the 28th, when not far off Bird Island, we sounded in 2,800 fms., the deepest water we have got for a long time. This island, though lying in a well-frequented track, was 25 miles out of its true position in the chart. To-day we saw, what strangely enough I have never seen before, a waterspout. It was a very high one, and just like dozens of drawings that you and I have seen of them.

On Sept. the 30th we anchored at Banda, a beautiful group of islands, the largest covered with woods of the most wonderfully vivid green. The anchorage is land-locked between three islands. In the curving bight of the largest,—a ridge of wooded hills rising abruptly from the waters of the harbour,—lie two smaller islands, the one a grand volcanic cone, while on the other the town is built, backed by wooded hillocks. Most lovely the scenery was as we steamed over the calm and deep-blue water to the anchorage; neat-looking hamlets, and large single houses along the shores of the larger island, embowered among cocos, kanary, and nutmeg-trees; on the other side, the clean, white frontage of the small town, half-hidden in foliage of palms, fruit-trees, and yellow-leaved avenues; a broad stretch of green lawn 'twixt it and sea; crowning a grass plateau above the town, a large square fort flanked by round towers, from one of which floated the ensign of Holland; and on the left, looking as if on the same island, for only a narrow boat-passage divides the two, rose grandly, 2,200 feet high, the symmetrical cone of the "ever burning" volcano, Gounong-API, its summit bare and sprinkled with white efflorescence, though low bushy vegetation and ferns, and woods lower down, soon clothe its flanks.

People here expect small earthquakes continually, and

severe ones occasionally, during which last they are not surprised if all the ships in the harbour are chucked up on to the land, and if all the houses come tumbling down. Gounong-API has the reputation of "always smoking"; we only saw white wisps of vapour issuing from its two craters. Several of our fellows went up it with no great difficulty but the steepness of the ascent,—a belt of loose rubble near the top being the chief difficulty; as my ambition soars not to excessive heights, more especially if great fatigue and bodily prostration is a necessary accompaniment, I did not go up.

I was never more charmed, and unexpectedly so, than with my first visit on shore; such a clean, neat little town; such a gaily-apparelled population; such cool-looking, whitewashed Dutch houses; such airy, poky, smoky, bamboo-built, brown-thatched Malay huts; such bright and vivid green lawns; such tidy well-swept streets; so trim, so natty, and neat—the appearance of everything. The front row of houses, those which look on the harbour, are all Dutch, each detached and surrounded by a garden, while the road in their front is shaded by an avenue. These houses are very large, surrounded by broad verandahs, with tables and luxurious arm-chairs in profusion; and there in the cool of the evening the family assemble. The street behind and parallel is also mainly Dutch-built, many of the houses being surrounded by high walls, heavily buttressed against earthquakes; in rear is a thick scattering of Malay cottages, standing among palms and fruit-trees.

The first thing I did was nearly—very nearly—to kiss a Dutch *vrau*; for walking along a street we met a nice little lady, aged I suppose about ten years, dressed in the very proper but stiff manner of Dutch children, behind whom walked a female attendant. As we passed, the little woman stopped, came straight up to me and shook hands, in the most *naïve* and *mignonne* of ways, and the joke of it was that she did not offer to shake hands with

my companion, but walked straight and gravely away ! Dear little Dutch vrou, none other I met here was half so nice !

Female convicts, and very ugly most of them were, dressed in blue blouses and high conical hats, were pounding the roads in groups, and most leisurely performing their labour. One of them beat a bamboo drum—three slow taps, during which the others all raised their pounders and took a small step sideways, then three more hollow taps with the drum, and at the third tap down went all the pounders with a thud together, and so all day it went on, tap, tap, tap, thud ; others were sweeping the roads and lawns.

Pleasant it was to sit in cane arm-chairs outside the club, smoking, drinking German beer, and watching the mingled population and life on the grass in front—Dutch soldiers and civilians drilling, awkward squads being bullied, the gaily-dressed Malay population of both sexes loafing about, and pretty little Timor ponies, prancing madly as our guns bang out a royal salute to the Dutch flag. This salute of ours the fort with its two old guns took three quarters of an hour to return, one gun at the second discharge having been capsized and thrown helpless on its back. Later the Dutch merchants, officers, and ladies take their evening walk, the former hatless, with thin black coats and white trousers, all dressed exactly alike. Very good fellows some of these were, and civilized, by which you will of course understand me to mean that they talked English—a civilization, however, to which the Governor, here called Resident, and the ladies had not attained.

But what made Banda one of the most delicious and beautiful places I know, were the nutmeg-plantations, with which the larger island is almost entirely covered.

Between the shore and the foot of the wooded hills ran a narrow strip of level ground, and this was one continuous nutmeg-garden along the harbour side of the island. Nothing could be prettier :—the small and shapely

trees laden with peach-like fruit among dense-growing and glossy foliage; the smooth and rounded boles of the lofty canary trees, buttressed at their base, towering far above and shading the spice-trees below; the bright greensward, here and there carpeted with ferns and dotted with cattle of a small and pretty breed; and the Malays, who are a small but not a pretty breed here, both men and women, sauntering leisurely about, unhooking with long bamboos the ripe fruit from overhead. On our right is the high bank of foliage from which now and then comes the boom of a nutmeg-pigeon; on our left is the shore, bordered with casuarinas, acacias, mangrove, areca, coco and pandanus palms. The colouring of the vegetation is unusually brilliant, the result of an even distribution of alternate rain and sunshine.

Along the shore we pass a few Dutch houses belonging to owners of the plantations, their fronts continued in high buttressed walls inclosing a large court within. A grass plot occupies the centre, the paths being bordered by pampas-grass and areca palms, while all round are the dwellings of the Malay work-people, the storing-houses for the nuts, and the ovens for drying the mace. Sitting under the verandahs were girls—giggling girls—sorting the nuts from large heaps lying beside them, shaking them to feel if the seed rattled inside, and if so, good, they are ready for sending away, but if not, they are given more time to dry. Great shallow baskets full of white and crimson mace (one kind of nutmeg has white mace) are piled one above another ready to be put over the drying fire; the overseer,—fat, and undoubtedly a Dutchman—sitting in an arm-chair, superintends from another verandah near by; a tame deer nibbles on the grass, “havering” near him is a solemn old cassowary, and many dogs bark at old Sam. Presently appears the owner of the house, and asks us in to large cool rooms, with little furniture but excellent beer.

I shall not bore you with nutmeg statistics, but when,

in future, you eat that spice, be it by these presents known, that Banda is, of all spots on the globe, the land where nutmeg-trees grow best, the island being almost entirely planted with them, growing under the shadow of the kanary-trees, which, with the light volcanic soil, and the rainfall distributed evenly throughout the year, are the favourable conditions. The nutmeg-trees are in fruit and flower all the year round; the flower is yellow, and the fruit like a small unripe peach. When ripe, the thick outside rind splits partly open, revealing the black nut inside veined with mace. The outer rind is thrown away (though some jam is made of it), the mace taken off and dried over a fire; the nut is kept about three months, till so dry that the seed can be heard rattling inside. The fruit is plucked off the trees by long bamboos, tipped with a prong and basket, the first hooking off and the second catching the fruit. Not long ago the nutmeg-trade was a Government monopoly, and when they gave it up the plantations fell into the hands of a few men, who have in a short time become rich. We heard very different stories about the value of these properties; four thousand a year was about the largest, on which they employ three hundred men and women.

I missed through "duty" a very pleasant cruise that many of our fellows took. With the Resident and some merchants they went in the steam-pinnace to the other side of the island, where ponies awaited them and carried them up steep hills, through lovely scenery and nutmeg-parks to a large plantation, where they were royally entertained by the owner, and saw a dancing performance. The dancers were two professional girls and some men, who are kept on the establishment for the amusement of the work-people; the men wore strange yellow knickerbocker suits, and silver helmets adorned with stuffed paradise-birds. Coming back through a village, Malays, grotesquely attired, danced madly before them in the streets.

The Resident here keeps up a good deal of state; in his

house, Malay servants, well-liveried and knowing their work, are in profusion, and wherever he goes he is followed by a man in green bob-tailed coat, who always carries a Chinese joss-stick for lighting cigars. When he goes afloat he is followed—as he was when in our pinnace—by an enormous canoe-boat, with elaborately carved bow and stern rising high up in a peak, and flags, Dutch and otherwise, fluttering wherever they are not in the way. The Malay paddlers sit twelve a-side, singing in time with their rapid paddling, digging powerfully and deep every stroke, between each raising their paddles perpendicularly in the air, then “down” all together again with a splendid swing, their naked bodies swaying, and the canoe springing forwards like a racehorse. A most tiresome noise they made as they paddled—showing off—round and round the ship, rousing everybody up from their beds, for it was early.

Another time that I landed on this large island I walked along the shore to the right, where was a considerable native village, stretching a short distance along the beach, then straggling up the steep slope of a break in the hills in rear. Dutch influence in neatness and cleanliness was apparent. A flight of some hundred stone steps, which looked very old, led up through the centre, with branch-streets right and left. Higher up were good Dutch-built houses, often inclosed, as in the town, by stone walls, with court and garden inside. A rich class of Malays lived here, and I was moderately struck with a bevy of ladies whom I met ascending the steps. They wore their hair rolled up in a ball, their dresses short and very clinging, and for “upper works” a long white jacket. They all carried Japanese parasols, and very nice some of these ladies looked. But they are not pure Malay by a long way, the Dutch blood, and the Portuguese before them, having plainly left its mark.

Arrived at the top of the stairs—how hot I was! I walked through seemingly endless and luscious nutmeg-

parks, the ground level, richly grassed, and pleasantly shaded. Beautiful butterflies fluttered about; but you who have never seen them in their full glory, can have no idea what an evident and lively feature they are in the scenery—far more so than the birds. And *à propos* of birds; along the shore and flying among the nutmeg plantations fringing it, large blue kingfishers were very common, as also small pied wagtails; but one sees few birds; the nutmeg-pigeons, which were so numerous at Ké, where no nutmegs grow, I did not see here, though I heard a few; but they say there are plenty. These pigeons swallow the whole of the large nutmeg nut, but only digest the mace.

Close to the shore at the further end of the village, and right opposite the volcano of Gounong-API, were visible the relics of some heavy earthquake—solidly built stone houses knocked down, their remains looking as old as the hills, and overrun with bush and creepers—from which stood up still the columns which had once supported the verandah.

This island was painful to land on, the shore being so flat that our boats could not come near, and, excepting at high tide, there was a long strip of soft muddy stuff to walk over which was quite dreadful. If you don't take off your boots they are spoilt—as mine were; if you do, you run the risk of treading on corals, on sea-urchins, on starfish, on enormous worms yards in length,—so slimy and squashy; while, in either case, you flop into holes concealed by sea-weeds. The corals are needle-y and hard, the sea-urchins—well, everybody knows what they would be like, running into one's skin,—while the starfish, coloured red and purple, are covered with large sharp knobs, and are probably hidden under sea-weed; all this leads to the escapement of *cusses* and loss of temper. But from a boat the beauty of these corals and sea-weeds becomes apparent, seen as they are many fathoms deep in the crystal-clear water, fish, wonderfully coloured, gliding in

shoals among their branches. And, by the way, fish are a great article of food here; in the day-time the blue and narrow waters of the harbour are dotted with canoes—having double outriggers—in which sit Malays fishing with rods. A long gar-fish is the most common fish caught, great heaps of which are seen lying in the market, and delicious eating they are. Cavalli, too, are caught, and are perpetually splashing on the surface of the water, in vigorous chase of small fry.

But Banda at night is most funereal. One evening we sent our band on shore to play to the populace, but nobody came to hear it excepting the Malay and soldier *oi polloi*; the Dutch families stuck to their verandahs. The town was quite dark, the streets deserted, and it was not till wandering some way into the native part that we at last heard signs of life—very loud and melancholy singing. Going towards the sound we found a crowd round a hut, in which were some forty Mohammedans chanting "*Allah, el Allah!*" sitting round a cloth spread on the ground, incense burning at both ends, while outside the house were spectators—Christians as well as Mohammedans, as we found out by several coming to us and saying they, too, were "Christian"; they were very civil, very crowded, and somewhat odoriferous.

The Chinese have a small part of the town to themselves, with excellent shops, and well dressed, good-looking young Chinese merchants in possession.

Banda is certainly a most charming and lovely little place, with a small and pleasant society of Dutch merchants, while in other places we have been to since then, officialism was entirely in the ascendent. They have compulsory military service the same as in Holland, and the disgust of some of the merchants there at was very amusing. We left on Oct. the 2nd; close by was a previous sounding marked on the chart 4,000 fms. and on this spot we found 1,420 fms.—sufficient proof of the incorrectness of old deep-sea soundings.

On Oct. the 4th we arrived at Amboyna, which, like Banda, belongs to the Dutch, is one of the Moluccas, and the capital, as it were, of the Spice Islands. At one time there was a great clove-trade from here, which, now that other lands have been found to grow it so well, has dwindled considerably ; and though a good deal of clove-trade still goes on, it bears no comparison with days of old, cocoa-growing being carried on instead. The clove-trees are not planted in plantations here, as the nutmegs were in Banda, but grow any way on the hill slopes, and I only saw one tree, and that in a cemetery.

Amboyna is (the old refrain !) a beautiful island, nearly divided in two by a broad sea-inlet running between high hills, covered with forest or yellow grass, and along the shores are Malay villages, half hidden in coco-groves. Fourteen miles up, on the south side, is the town of Amboyna, the bay continuing some six miles further on narrowing just above the town, and again broadening into a lake-like sheet of water, bounded by soft and lovely vegetation at the foot of low wooded hills. We anchored almost alongside of a pier crowded with Dutch soldiers, and Malays, excited at our arrival. Though the town from the anchorage looked picturesque enough, with trees and palms springing up above the roofs, we were rather disappointed, as it by no means looked the large place we had heard it was ; but, when on shore, we found it was very much larger than Banda.

Passing through a large old fort, within which are barracks and the Resident's house and gardens, we came to a grass-lawn surrounded by the houses of Dutch officials and merchants ; then came another short Dutch-built street or two, then detached houses, surrounded by gardens, the roads bordered by flowering shrubs and palms, and beyond them a scattering of Malay huts in orchards of fruit-trees, —nutmeg, cocoa, durian, bananas, &c.,—and of palms—coco, areca, sugar, and sago. Delightful indeed were these lanes behind the town, shaded with kanary, bamboo, fruit

and palm-trees, but even here the heat was so great that in a few minutes one inevitably became quite damp. On the right of the Dutch-built portion of the town are the Malay and the China quarters,—streets of small houses, huts, and shops; a mosque or two, a large market full of fish, fruit, and vegetables, and the Malay smells paramount everywhere.

The population is a very queer one, and appears, as to race, most hopelessly intermingled; the upper class of Malay women dress entirely in black, and the lower class in brighter colours, while there is a large and pleasant element in the children of all races—Malay, Chinese, Dutch and half-castes—going and coming from school, as indicated by enormous slates. Some of these girls were rather pretty, with long black hair, very short white frocks, somewhat longer white trousers, white jackets, white stockings, and French boots.

There is a club where we were made welcome, luxuriated in arm-chairs, and read old London newspapers. Two rivers, crossed by frequent bridges, run through the town from the hills close in rear, their banks fringed with tall bamboos and palms, while in the water were Malay women washing clothes, and very picturesque they looked; but I cannot say Malay women are pretty as a rule by a long, long way, they, among other things, having quite forgotten the bridge to their noses.

Among the foliage of these woods behind the town you see crimson spots, which might be blossom, but, flying away with a scream, reveal themselves as lories; here, too, is a large Dutch cemetery, which has the look of being very old, and so it is, for Amboyna is a most "ancient city,"—a rambling collection of stone and brick monuments many crumbling away with age, earthquakes, too, probably not having improved them. The partly obliterated inscriptions puzzled us at first on account of the numerous *Herr Ruhts* who had departed this world at Amboyna. Good gracious! we said, here's another, and another, and

yet another; an endless family indeed! for of course it was nothing more in each case than '*hier ruht*' so and so!

The shop-business here seems entirely in the hands of Chinese, some of whom have excellent shops.

On the second day the ship went down the bay a couple of miles, and made fast to a coal-wharf, the water, as everywhere in the bay, being very deep right up to the shore. We enjoyed this amazingly, for we could step on shore, lounge about under the trees, or under our marquee tent, where we placed tables and chairs, and made it our drawing-room. Such a pretty spot! a broad strip of level greensward at the foot of gently rising hills; clumps of bamboos and trees, beneath which, here and there, were a few Malay huts, their walls alive with ants. On these hill-slopes were a few Chinese graves, of solid workmanship, and ugly in the landscape; a horse-shoe shaped wall built against the side of the hill, the floor paved with stones, and in the centre a large stone tablet engraved with mystic gold signs; apart, on one side, is a stone seat, whereon, perhaps, to contemplate.

To the wharf come canoes from the town, bringing bananas, pine-apples, and other fruit; also boxes full of shells, for Amboyna is *the* place for shells, which, therefore, are dearer here than they are in London, and I saw no box that tempted me. And to our tent come girls and boys offering us branches on which gigantic creepy "stick" and "leaf" insects are clinging.

Very pleasant and useful these people were belonging to the huts close by, for they brought us lights for our cigars, and being generally of a laughing and amiable disposition, were amusing studies of the genus Malay. But there was one young woman—a wife and a terrible shrew—whom, through one of us who spoke Malayan, we had to inform that if *we* were her husband, she would be beaten with many and the hardest of stripes! With her, by contrast, was a very pretty and shy young girl, one of

the few pretty ones I have seen, to whom it was a perfect pleasure to give ship's biscuit, of which they are very fond so we kept a bagful ready in the tent.

The canoes are a great sight ; both here and at our first anchorage they came alongside full of fruit and eggs, and literally crowded with lories and cockatoos ; while occasionally a cassowary, with legs tied, lies prostrate at the bottom of the canoe. These cockatoos are not the Australian yellow-crested species, but those gentlemanly-looking old fellows, you know, whose white feathers curl like moustaches over their beaks, and their erected crests show pink underneath. They sit solemnly along the sides of the canoes, while the lories are tied by their legs to bamboo perches, and are always moving and bobbing about, never at rest. They are quite lovely, one kind coloured crimson, and another green, blue, and purple.

The Malay fishermen fish by torch-light, with spears and nets, and it is a pretty sight at night to see hundreds of canoes, each with two or three torches, putting out from the huts and villages along the length of the bay, looking, when they get all together, like some large town in the distance. Then in the early morning they all come paddling back—whole fleets of them—keeping close together, abreast, in a row ; and as they pass the ship, by way of a little show-off, they strike up in chorus a boatman's song, keeping time to the double knock of their paddles against the sides of the canoes. Queer-looking craft they are, these large canoe-boats, roofed over in one part with light thatching, on which cocks, loudly crowing, are perched in numbers. The canoes are of all sizes, from quite small, double-outrigger shells, to these large craft, with a dozen or more paddlers sitting each side. And queer, too, look the fishermen paddlers, wearing nothing but a conical hat and a waist-cloth.

One morning I and two others started for a village on the opposite side of the bay and some way down, with intent to shoot deer. We had some difficulty in procuring

anything to take us across, but at length got a small double-outrigger canoe, manned by two native Indians. Our destination was about four miles away, and as it was a dead calm, we thought nothing of the fact that our gunwale was only a few inches above the water. We paddled safely across, arrived at the village, and went to the head-man's or, as they are called, Rajah's house—a good bamboo-built one with a verandah. The Rajah soon appeared; a wrinkled, distinguished-looking old fellow, and to him we explained that we wanted beaters. Some of our shooters had been here the day before, and then had procured a surfeit of volunteers for beating, but to-day either because they did not get sufficient reward yesterday, or because they got too much, and were lazy, only a few men were forthcoming. However, they were enough to carry our ammunition and luncheon, and as we walked through the village two more men joined us with old flint muskets,—doughty hunters I'm sure they imagined themselves.

We soon struck out of the coco-groves and woods which bordered the shore, on to plains of high grass which stretched away to the base of the hills, up whose spurs the high grass continued. Then all making a great noise, we plunged into the grass, steering towards the hills, an almost vertical sun blazing down on us, the grass nearly as high as my head and all matted beneath, through which the labour of forcing our way was very considerable. Presently, quite close to me, I heard a great rustling, and away bounded—their jumping heads just visible above the grass—two deer, a fawn, and a hind. They were fired at—but not by me—and missed by two rifles. We followed the direction they took, finding their tracks on the sand-banks of a broad, shallow river, cut up here into several rivulets. Then again through a belt of grass-plain,—thick woods on our left and hills on our right,—we continued our painful way, the canny thing to do, we found, being to strike a deer track, as, if you were lucky enough to find one, it was much easier work.

When we had walked across this, we rested under the

shade of a tree at the foot of the hills, and sent a man back to the stream for water, for our exertions had been really great, and we were suffering from extreme thirst. They brought us a most delicious wild fruit, *galoba* they called it. Inside a soft leafy husk was a series of things which you squeezed, and there flowed into your mouth a juice which tasted of a mixture of acid gooseberries and sweet apples; quite delicious we thought them.

And now we had to ascend a steep grassed hill-spur, which did not look easy, and it wasn't! The grass was as thick as ever, and the heat quite overpowering, the sun being vertical now in this part of the world. When half-way up, we saw three deer ahead, but they, too, saw us, and sensibly vanished over the crest of the ridge. Between these rounded spurs of grass there were deep narrow gullies filled with trees and shrubs, and down one of these they probably went, thereby doubling on us very cleverly. We also topped the ridge-crest, beyond which lay a large grass basin, and beyond it again rose the hills, but we saw not the ghost of a deer.

We came down by another spur, and about this period I began to think that I had had enough of it. I don't mind losing a certain amount of tissue; but one must draw the line somewhere, and really that sun was sucking the 32 parts of water of which I understand my corporation is partly composed, quite, quite away, and I do wish to return home in a somewhat better condition than mere "ribs and trucks," you know! Down this spur we came by a deer-track, their hoof-prints in soft clay being quite fresh. At the bottom was a clump of trees, in which, when I was passing through, something mysterious rose silently from the ground and went up into the branches; being puzzled in the gloom as to what it could be, I fired, and down flopped—after a moment's hesitation, during which it swung about—a large flying-fox. Of course this shot had the disastrous effect to frighten a deer lying close by, which they above me saw going across this second belt of grass

that we had crossed before. They yelled, I and a beater ran with hot speed across by a deer track, but 'twas no good, the deer again crossed the river in the same spot, but opposite direction, as before. But this was a strategic and successful *ruse* on my part, and had this result, that I came to the river, where we had agreed to have luncheon, and also that the man with me carried the luncheon-basket, so I sat down and commenced, sending the man back to tell my companions of what I was about, and a very pleasant little luncheon we had on the shaded banks of the stream.

We had brought a large bagful of ship's biscuit for the beaters, on which they feasted, we on German sausage, game-*paté*, fresh bread, claret and whisky. We offered them some sausage, or rather we offered them the excellent lard in which, inside the tin, it had reposed, but only one man ate it, our canoe-Indian, while the others, being devout Mohammedans, would not touch it, saying *Babi babi*, which meaneth pig, for which we laughed at them, and were grateful to the man who made sausages, and also that we were not as those other men! Do you know what Mohammedans say about bananas, that they were created especially for the Prophet in his toothless old age? A charitable and very proper idea, I think. An old man had joined our party a short time before, a dear old man, one who from his toothless condition (he could not eat ship's biscuit; but then who but a sailor or convict would if he could help it?) we thought must "sympathize with tears" in the banana tradition. This old man had a store of kanary nuts, which he cracked and we ate, giving him, not stones, *i.e.* ship's biscuit, but soft bread in exchange; and *à propos*, these nuts are here, too, a great article of food with the natives, and kanary-trees are common.

Then we walked back along the river's bank through most lovely vegetation, thin, straight palm-stems rising from a world of rich colouring into the cloud of foliage far overhead; and we found the galoba plant, a small semi-palm tree, filling ourselves and haversacks with the fruit

accordingly ; and so by a roundabout path we reached the edge of the grass plain, and walked along it, the beaters beating the woods for the chance of deer.

M. commenced shooting small birds, when up got close to him, and in open ground, two more deer ; he peppered them with shot, having just previously taken out his ball-cartridges, and uselessly of course. C. and I ran like mad to try and cut them off ahead, but they ran far madder ; I fired wild shots at half a mile's distance, the beaters yowled horribly, the deer vanished, and intense vexation and irritation against M. reigned supreme ; C. bewailing his fate for being with people who came to shoot deer, but frightened every chance away by firing at flying-foxes and small birds ; and, as a fact, each time we did fire we did lose good chances at deer ; but then C.'s sporting enthusiasm is very tremendous, while ours wasn't ! All this time, snipe were rising around us in dozens, the painted snipe, great big fellows, and if ever I should come here again it would be with a shot-gun after snipe, instead of with a rifle after deer.

But I must not forget to tell you that our fellows yesterday did shoot a doe over here, which they got by its being driven by the beaters close to them, while to-day we could not do that. Deer must be very numerous on the island, judging by their tracks, and the horns which are sold—some with four points—and we were unlucky not to see more to-day. We returned to the village empty-handed and disgraced, and sat with the old Rajah in his verandah, outside which gathered a crowd of admiring Malays, but not one woman. We drank much coconut milk, mixed judiciously with whisky, while they examined our rifles ; the Rajah's son—a handsome young fellow—taking shots at coco-nuts and anxious to buy a rifle. This man had a charming little boy—the old Rajah's grandson—dressed in garments of chintz, a rosebud pattern on white ground.

And now there befel us a great adventure, of whose pleasantness, or otherwise, I leave you to judge. Since

the forenoon a fresh breeze had sprung up, the sky was clouded, and the sea flecked with white horses, so much so that our Indian canoe-men would not go over, but we said "O nonsense!" The old Rajah and his son said, "No, no!" and went through a pantomime, indicating much sea, much wind, much roll, and final turn over. After a time we went to the canoe and found the men lashing extra bamboo spars to the outriggers, which looked like going after all. Our rifles, cartridge-bags, &c., were put in, and though the Rajah's son positively refused to shake hands and say good-bye to us (which he thought would look like conniving in our madness), even offering to take us over in a large canoe-boat, though everybody looked anxious and evidently thought "danger," we only laughed and said "We swim," M. particularly implying his readiness to swim to the other side if anything happened. And so like idiots we shoved off, our Indians, like bigger idiots, agreeing thereto.

We set the small sail, and for several hundred yards flew over the surface of the sea in an exceedingly merry way, but of course—as we very soon saw was inevitable—when half a mile from our starting-point, flop, in came one vicious wave, and flop, came another, nearly filling the canoe, and flop, came a third, and down we sank, sank bodily, canoe and all, still retaining our respective positions till the sea came up to our chests; then happily the conditions of buoyancy seemed satisfied, and there we were, a very fine state of affairs! nothing of the canoe visible excepting its slight mast and small sail flapping wildly above the waters; we almost immersed, with frequent waves washing up to nearly our shoulders, making us heave deep, cold *sougs* every time.

With the second wave, before we had either time to lose or retain our presence of mind, away floated the sackful of galobas, away floated the flying-fox, and away floated a large tin botanical affair, which did once contain our lunch, but now small birds. The Indian in the bows held on

manfully to the rifles, though of course under water. C. handed me a silver pewter—which he had borrowed without leave—and his coat to take care of, the first of which I promptly let drop to the bottom of the canoe, but the coat I held, and when we were rescued afterwards, C. was awfully aggrieved, because I had not kept it *dry*. "Why," said he, *naïvely*, "that was the reason I gave it to you for," which was, I think, the best joke I ever heard.

And all this time we roared and screamed like Britons for assistance, while we went deeply floating on with perfect safety, that is to say, with perfect-safety-feeling, after we were sure that the canoe was not going to sink lower; the only thing to do was carefully to maintain the perpendicular, so as to prevent the canoe from turning over on its side, or altogether, for then goodbye to our guns, pewter pots, and possibly ourselves. Our chief concern was C., who, at the first wave, stood up (thereby dangerously raising the centre of gravity of the "system"), supporting himself by my shoulders, and we had the greatest difficulty to prevent him trying to swim on shore and send us assistance; he and M. had quite a hot argument about some former example of C.'s powers in the swimming way, in which C. said he *had* done so and so then, and could easily do this now, while M. maintained that he had *not* done so and so then, and could not do this now. "But go on, go on, my dear fellow, and I'll bet you, if you do try it, you will not reach the shore," &c., &c.

We drifted along fast, I trying vainly to paddle the canoe towards the land (but I found that a paddle did not influence to any appreciable extent a canoe immersed some distance under water, and in it five men—odd, was not it?), parallel to which, and about three-quarters of a mile off, we were drifting; and so, for about twenty-five minutes, laughing, joking, swearing at C., trying to keep him quiet, and not very apprehensive about matters in general, we sailed along beneath water, and then saw two canoes—one manned by women—paddling out with all speed from some

huts on shore, while behind us at the village we had left we saw a large canoe-boat being launched by a crowd of men, and coming up fast under a score of energetically worked paddles. The first two took us to land, and then the large one took us back to the village, while our Indians baled out their canoe, and afterwards sailed safely over in a decidedly nasty chop of a sea, and even this large canoe-boat was taking more water than was comfortable. The men laughed at us tremendously, in which we heartily joined, the swimming part of our programme being all rehearsed by them for our benefit.

They are a most pleasant people, and got—the Rajah's son in command—a larger canoe-boat ready, and then with him, some twenty paddlers and a large sail, we paddled and sailed across to the ship in no time. So happily ended that adventure; but if it had been later in the dusk, or if we had got further from land before we filled, we might have drifted for a very disagreeably long time, and as there are big sharks in the bay, matters might not have ended quite so nicely as they did. And it was well, very well, that extra flotation power had been lashed on to the outriggers, or else the canoe would have sunk much lower, and then we should not have been able to maintain our sitting positions, and as one can't stand on a moving piece of wood some distance below the surface of the water, with nothing but thin air to hold on to and grasp above, why then—&c. But nothing in my experience of canoeing in most parts of the world has given me such confidence in their ultimate safety properties as this adventure in a double-outrigger canoe at Amboyna.

We loaded their boat with ship's biscuit and trade tobacco; to the small boy we gave chintz for his personal adornment; to his father cigars and great civility, offering him wine, which he would not touch. A fine lot of young Malays these who paddled us over, with splendid chests and shoulders from continual paddling—the boat spurting ahead to their vigorous strokes and cries of "Héla"

splendidly. A very convenient manner they have of keeping their clothes dry when it rains—they take them off, and wrap them round their necks, the enormous conical hat completely sheltering them; and one sees women in these straight tropical downpours gather their garments tightly around them and stand quite dry, inclosed within a running cylinder of water from off these parasol hats. Talking of women I nearly forgot to tell you that close alongside us one day a canoe, manned by five women, sank in just the same manner as ours did, and you should have heard them howling and yowling, while dozens of canoes full of laughing Malays went to their assistance.

On another day I went in the pinnace dredging to the head of the bay, the muddy bottom of which, however, made it a hopeless "dredging-ground." So we landed right at the head, from which a shallow canal runs across the narrow isthmus to the sea on the other side. They had seen us coming, and a chair was waiting to carry us from the boat dryshod to land. We walked along a grass road and soon met an individual, whom, from his black clothes and silver-headed stick of authority, which a man was carrying behind him, we concluded rightly to be the schoolmaster of a village, where we soon arrived. Well-built huts in neat inclosures, clean roads with bordering shrubs and flowers, fruit-trees and palms in the gardens, and Dutch neatness everywhere. The canal runs through the village, where canoes were loading with maize and fruit. At the other end of the village we came again to the sea, from which canoes were being dragged over the intervening bank into the canal; this bank being left on purpose, for if cut through, every tide would throw another sandbank down.

The schoolmaster did the honours, walked through the village with us, gave us beer, and took us to a school where a good-looking lot of brats—boys and girls—were singing lustily.

Then we went into the woods to shoot birds; woods

full of gorgeous butterflies, moths, and beetles ; of lories ; of strange things creeping and flying : a wood of intense and most lovely vegetation, of whose exquisite beauty I can give you no real idea. But we did not find what we particularly wanted—the racquet-tailed kingfisher.

I never saw butterflies more numerous, flying about both in the village and woods ; such beauties they were every one ! and I observed a strange butterfly character which eschewed the woods and kept to the sands on the shore, which colour it mimicked exactly. We shot some lovely little honey-suckers, and doves, and divers other birds, and I have come to the conclusion that the vegetation of the Eastern tropical world exceeds in beauty, richness, and variety that of the Western—that is, judging by what I have seen of both.

Going back we dredged along the shores, with singularly barren results, so we landed again at a spot nearly opposite the ship. The whole shore along this side of the bay is lined with an almost continuous broad belt of cocos, and behind this we found a thick wood of sago-palms. Sago-palms grow thick-stemmed and low ; at a short distance from the ground great arched-leaved branches spring from the stem, falling gracefully over on all sides, interlacing one with another. The air is hot, heavy, and damp, the luxuriance of the vegetation almost oppressive, the rich brown of the palm-trunks relieved by an intensity of green foliage above, below, all around ; the silence broken by the gurgle of a brook, by the boom of a pigeon, by the distant knock, knock of the sago-feller's axe. Quite eerie and solemn the silence and loneliness, and as you creep about the least noise is startling—a lizard under foot, a bird overhead, or some huge butterfly emerging mysteriously out of the jungle ; and when there suddenly appears a copper-coloured, nude individual, axe in hand, you are not quite sure whether to be alarmed or not. I gesticulated to this man that I wanted to shoot birds, so he came and crept about with us, but we got only a perfect little gem

of a kingfisher. And we had an exciting, but fruitless, chase after a large cuckoo-pheasant-looking bird. We found very poor dredging along the shores, but next day found better in deeper water further down the bay, along whose shores, at intervals, are large fish-weirs, the favourite resting-places of large swifts and kingfishers. The waters of the harbour are dotted with paddling or sailing canoes, going from hut to hut, from village to village.

We enjoyed our stay at Amboyna very much, particularly at the coaling wharf, where one could bathe close to the shore, yet in deep water, and where we played cricket and had athletic sports, and made the shore our home for the time being. The Dutch were official and stolid, and we could not "chummy-ise" at all.

Having been there a week, we left on Oct. the 10th for Ternaté, steering through the Bouro Strait due north almost, through the Molucca passage, past Obi, past Batchian—where grows the clove-tree wild; past Makian—an old volcano, where in 1646 occurred a tremendous eruption splitting the peak in two, destroying villages, and their inhabitants by thousands; the island again re-peopled, once more in 1862 the volcano burst out, killed some 6,000 people, leaving scarce one to tell the tale; and the ashes discharged so covered Ternaté—forty miles distant—that nearly all vegetation there was destroyed; past Motir, another volcanic cone, and on the 15th we steamed in between the islands of Ternaté and Tidore, both grand symmetrical volcanic cones, and anchored off the town of Ternaté in the evening.

Beautiful scenery; at the foot of one cone—Ternaté, green to its summit 5,400 feet high, from which light clouds of steam are slowly rising, the slopes covered with fruit-forests, and here and there small cultivated fields—we lie anchored; towards the south, across the narrow passage through which we came, rises another sharp cone, perfect in form, Tidore, 5,600 feet high; and further south yet, continuing the volcanic line, are visible the conical peaks

which we have passed on our way here ; to the eastward, across a broad stretch of blue water, lies the large island of Gilolo, a ragged sky-line of volcanic cones and mountains, and to the south, of lower hills grassed and wooded, where deer are said to abound.

The town is built along the shore, half hidden among fruit-trees and coco-palms. As usual, there are the Dutch, Chinese, and Malay "quarters" ; the former made up of square, verandah'd, whitewashed houses, and the latter a jumble of bamboo huts, some in rows, others detached, and standing amid luxuriant foliage. Behind the town lies a considerable extent of level ground before the wooded slope of the mountain commences, and a great portion of this is occupied by plantations, growing every spice, fruit, and palm under the tropical sun. Cloves, pepper, cinnamon, nutmeg, coffee, cocoa, pineapples, durians, oranges, limes, citrons, bananas, bread-fruit, and endless others, with palms of every kind, are all here planted on a greensward level as a billiard-table. I never saw in any country anything more delicious and beautiful, and the only plantations which can be at all compared with it, are the nutmeg-plantations of Banda, and the cocoa-plantations of Trinidad in the West Indies.

I only wish that you could stroll with me some morning early here, when the sun is up, but not yet high nor hot ; when dew is sparkling on every leaf and blade of grass ; when birds are singing flutily, and flocks of green and crimson lories go *swishing* out from the trees : when the air is redolent with the perfume of spice and flowers ; when the colouring of the foliage close around, of the fruit and bamboo-forests on the volcano's slope, of the sky overhead, of the distant cones of Tidore and Makian are all brightest in the rays of the rising sun, then surely would you think yourself in a second Garden of Eden !

The town is very much like the other Dutch places we have visited lately, but if you like I will take you round ;

if you think it too hot, though, you know what to do—you need not come.

On landing, we are close to the "Resident's" house, large, cool-looking, with garden and trees around. We turn to the right, keeping along a road bordered with yellow-leaved, scarlet-blossomed trees, a strip of grass running between us and the sea, and on our left a row of detached Dutch houses. At one of these—the club—let us stop, and recline in cool cane arm-chairs, possessing if required an infinity of sleep, where we will smoke, drink Dutch beer, and watch the stream of queer people passing along the road in front—Dutch, Malays, Chinese, Arabs, half-breeds, and Papuan-looking Indian natives from the interior of Gilolo. Hatless Dutch gentlemen taking their evening walk, young Fräuleins—who pretend not to see the twenty pairs of naval officers' eyes staring at them as at some not-for-long-time-seen-or-heard-of myth—doing the same; Malays of both sexes in gay-coloured calico garments; well-dressed Chinese, and merry pig-tailed little John Chinamen returning from school with large scrawled-over slates; clear-skinned, dark-eyed Arabs dressed in one of their orthodox fashions, red fez cap, short white petticoat over white trousers and under black jackets; fishermen, carrying bundles of rainbow-hued fish, dressed in the very scantiest of waist-cloths (not the fish, that is, but the fishermen); Malays carrying great bunches of delicious little bananas; while a group in front of us are cooking at a fire beneath a tree, where also are a number of gorgeous little lories in bamboo cages.

And then to refresh ourselves, let us eat a Malay curry, a curry to dream of, a curry to eat of till you can eat no more, a curry to make one's mouth water at the bare recollection! For you people at home have no notion of what a good curry is like, the powder barely perceptible, and a strong flavour of young coco-nut mingled with all sorts of things of which English curries are ignorant.

And now we will walk through the Malay and Chinese

quarters, clean and neat-looking enough, past a great, square fort innocent of guns, past more town till we come to a sweep of grass lawn, stretching up from the shore to the Sultan's palace—a double-storied Dutch-built house—a not imposing-looking residence for a Sultan, certainly, but in this case typical of his lost grandeur and authority. For, two hundred years ago this Sultan, or rather his ancestor, was Prince of Ternaté, of Batchian, and of Gilolo from its northern point to some other south of the island of Celebes, 600 miles in extent; and besides this, a great part of Celebes and some small islands belonged to him. But then came the Dutch, who induced him by the offer of seven thousand dollars a year to allow them to destroy all the clove and nutmeg-trees they could find in his large territory, and yearly they sent out expeditions to destroy any signs of the spice-trees which might be propagated by birds, &c.; thus trying to keep the spice trade a monopoly, and growing only in their islands of Amboyna and Banda. But the result was unsatisfactory to both Dutch and Sultan, for the former found that their spice islands did not pay government expenses, and the latter that his authority was going, going, till now 'tis little better than a name, and an empty one at that. Which serves them all very well right! But we did see some signs of vassalage paid to him by one of his nominal possessions; for one morning there came paddling into the harbour a long string of large canoes, with flags flying, tomtoms beating, making generally a tremendous clatter, and heavily laden with plantains and other fruit. What he did with them I know not; we supposed they were tribute. By the sea, under a shed, was his great state canoe, gaily painted, with carved, peaked bow and stern.

Behind this sea-street are one or two others in rear, and then come scattered Malay huts surrounded by trees. Into one of these I was beckoned, and found—dangling and swinging by their legs, or sitting on perches—a number of lories and parrots. There were several lories of

two kinds, and three parrots, the former shrieking and restless, the latter sedate enough, excepting, indeed, if I made advances to them, when they screamed at me. These lories seldom I believe reach home alive, which is a great pity, for as pets they are the most fascinating, lovely little creatures imaginable. One kind here is crimson-bodied, with bright green wings and stockings; another kind is purple-capped, orange-necklaced, with wings and body a mixture of blue, purple, green, and red. Of the parrots, one was a large, gaunt-looking bird, piebald blue and green, another was almost wholly green, another almost wholly dark-red, with a mauve breast, and an orange band under a broad tail. A remarkable fact about these last two is that for a long time they have been regarded as two totally distinct species, but quite lately a man, who has been collecting birds out here, noticed that all the red kind brought to him were females and all the green ones males, something like eighty specimens of each. And so it has come to be acknowledged that these two birds, so totally distinct in plumage, are but the male and female of the same species, which is, you know, vastly interesting! Both of these by the way, we have seen wild. At Arru we shot the green parrot frequently, and they were all males; there also we saw several tame red ones, and another I saw at Little Ké island, flying past me in the woods.

I must wind up this parrot talk by telling you that the Professor came to the cottage afterwards, and bought all the parrots and lories at one fell swoop, and with a yet feller swoop poisoned and skinned them all on board! We did, however, keep the red parrot alive for some time, but its plumage was in too excellent a condition to permit its mortal existence, so to insure its immortality in some museum—for perhaps your gratification some day—he was killed and skinned. Moral: don't have fine plumage!

On the left of where we landed live some well-off Malay traders in paradise and other bird-skins; cheaper here—till

some tiresome man went and spoilt the market—than they were in Arru; half a mile further on lives a Mr. Brown, who is *the* bird-man of Ternaté, which is a great centre (not so much now, though, as formerly) for the trade of these Eastern islands, viz., paradise-birds, tortoiseshell, *bêche de mer*, mother of pearl, &c. This Mr. Brown collects all kinds of birds, but chiefly paradise-birds; and he has schooners which go down to these wild places where they are found. He tells us that the crews are frequently killed, and the schooners once or twice have not returned, which, as Mr. Brown observes, does not pay him. He has great boxes full of birds of any and every kind that his hunters can get hold of, including paradise-birds of all the sixteen (or more) species, and three specimens of the great bird of paradise *alive*. One splendid fellow was in a large cage by himself and in fine plumage, the other two lamented their captivity together, with their plumage in a somewhat draggled condition. And he has, too, live baboons, parrots, numbers of the great crowned pigeon—the "goura"—of two species, and rose-crested cockatoos.

One day he opened all his boxes and had a grand display on the verandah; the Professor bought a fine collection from him, as he would not sell anything except wholesale.

The Resident here is a charming man, talking fair English, very fond of natural history, and knowing all about and taking much interest in our cruise. He, also, had a fine collection of the different species of paradise-bird-skins, including a new and comparatively dingy one not yet described.

He gave us a reception one night, and a mighty odd assemblage to meet us there was—old, respectable, spectacled Chinese, Arabs, Malays, Dutch, and young ladies; but I cannot, cannot describe what most of them were like, excepting this, that they were mostly half Dutch and half Malay, or half and halves of some sort. To the fiddling, squeaking strains of Malay musicians our unfortunate men (those who danced, at least) had to dance

with those houris, who were not pretty, nor light, nor graceful, and of course could speak no civilized tongue. But "let me hasten to say" that the three or four Dutch ladies and girls were very pleasant, and it is not to them that the above description applies; but then, who *can* talk Dutch? The broad verandah was the place where we sat and danced, while the crowd were allowed to come into the court, our band, which played occasionally, being much appreciated.

Leaving Ternaté on Oct. the 17th, we arrived at Zamboanga late in the evening of the 23rd.

Zamboanga is built on the south-western promontory of the largest and almost the most southern island—Mindanao—of the great Philippine archipelago. Across a narrow strait lies a high island, Basilan, which the Spaniards claim, but excepting by a fort or two have not otherwise managed to make use of, and they say too that the native population is hostile. South of that again are the Sulu islands, over which also the Spaniards claim authority, but whose Sultan a short while ago rebelled, and is now having his harbours blockaded and his villages bombarded by Spanish gunboats, for some late act of piracy. The Spanish officers tell us here that it is a hopeless job, for the name of the population is legion, besides their being a wild and piratical people.

The everlasting cocos, bananas, and bamboos, fringing the beach; shaky-looking stone houses; a large fort, and brown native huts; a range of green hills some three miles off, rising above the palm and tree tops; across the strait the mountainous island of Basilan; Spanish gunboats, native coasting-craft, and canoes around us—such is the view from our anchorage.

The main town is composed of a short street or two of stone and wood-built houses—governor's house, barracks, church, and official houses, &c.; and another of native huts, a cluster of which are also built over the water on posts. But the Indian *pueblo* extends among orchards of fruit and palm-trees a long way to the left, and another road leading

to the hills across the intervening plain is lined with Indian houses the whole distance.

An odd and picturesque scene was going on in this first street we came to after landing. Along the centre runs a sluggish stream, the banks planted with trees, and steps leading down to the water. The houses on both sides were occupied by Chinamen's shops, whose owners were sitting at their doors placidly smoking. In this stream, along the whole length of the street, were women and girls, half immersed, washing their clothes and themselves. Women plump, pretty and graceful: women the reverse; women with their hair down—a thick, black, wavy mane—and women with it up; some pounding away at linen, some washing their hair, and some skylarking—inflating their garments with air, throwing themselves on the top of the water, bobbing and floating about in this impromptu air-cushion, till the air escaping again reduced the drapery of these damsels to the original clinging condition. It was a busy, pretty scene, and absorbed our attention a good deal this first day of our stay here. Their dress is all the same, a long single piece of blue cloth wound round beneath their arms; a graceful and tight piece of drapery, which same garment doubled forms their ordinary gown, in this case also tight, but not so graceful. And to complete the description of costume in the Philippine Islands—above this under garment, which as to texture and quality varies with the wealth of the owners, they don little jackets of various degrees of beauty, from those of coloured cotton to beautifully woven and embroidered piña ones. For I must tell you that in the Philippines there is a great native industry among the women—piña weaving.

Piña is the fibre of young pine-apple leaves, and with this fibre they make a gossamer-textured cloth, very light and transparent. In every native hut is a loom—sometimes several—of apparently the most primitive kind. At these, women and girls are always working, making piña cloth of different degrees of fineness, for so fine can they

make them if wanted that the weaving has to be carried on under a musquito curtain, and a long day's work will only produce half an inch. But the ordinary stuff is usually mixed with silk, the purer kind going to Manila, where it is beautifully embroidered, and most extravagant prices asked for it. A small handkerchief was once sent to the ex-Queen of Spain, its value being estimated at one hundred pounds.

Women here never wear stockings, but on their bare little feet are slippers, consisting of a sole and a bit of stuff only over the toes, the littlest member of which is placed outside, and keeps the slipper on. Their hair is always intensely black and glossy, brushed smoothly back, and knotted simply behind, or else worn loose. Beauty is by no means general, excepting among the young girls. The peculiarity of the men's apparel is that they wear their shirts like coats—outside all, and nothing over them. These shirts, too, range from the cotton ones of commerce to embroidered piña ones. For his shirt is the Indian's glory, and the well-to-do have many wonderful shirts, each costing a great amount of dollars. They have a rage also for diamond studs, and there is consequently a considerable diamond trade in the Philippines.

I wonder what you would think of me if I appeared some morning before you with a beautifully embroidered shirt, striped with blue or crimson silk perhaps, and exquisitely transparent, worn over a pair of trousers and nothing else! But that is *the* dress here, and it looks most clean and cool.

The population of the town is made up of a few Spaniards, chiefly officials, of a great many Chinese, and of natives, who are called generally "Indians." They are a very mixed race, half Indian, half Malay, half Spanish, half Chinese; this half-and-half being called by the Spaniard *Mestizo*. Almost all the population here are *Mestizos*, but there is a small colony of *Moros* (Moors) also here, of whom more hereafter.

But the astonishing part of Zamboanga are the Chinese, who occupy nearly the whole of the two streets, have excellent shops, large and well fitted up, where everything can be got and of the best quality, from portmanteaus to *pâté de foie gras*, from bewitching velvet—silver, gold, or silk embroidered—slippers to Bass's bottled pale ale, from chintzes of gorgeous pattern to Messrs. Blackwell's jams and pickles, from cotton-stuffs of all colours and qualities to delicately-woven piña or silken-stuffs. And it is the Chinese, too, who do the water-carrying and coolie work, who keep the neat vegetable gardens, who marry the women, who make the shoes, the trade, and get the money of Zamboanga. A wonderful people, always looking clean, prosperous and grinning, always to the fore where no other people can get on, civil, and in their shops offering you contraband cigars, and, also, as ready to cheat you out of a dollar as most civilized nations. Zamboanga not being a free port there are no European merchants (except one or two Spaniards) in the town.

In the interior and on other places round the coast live a race of fine wild fellows, of Mohammedan faith, called by the Spaniards Moros. They are very numerous and powerful, having Sultans and Rajahs over them, who used to bother the Spaniards much, whose authority they would not acknowledge, but who now have treaties of amity with them, and they are more or less on friendly terms one with another. The Spaniards hold only a very small portion of this island, a strip here and there along the coast, not two-tenths altogether of the whole island's area. These Moros were, we heard, to be seen at home some sixteen miles inland from Zamboanga, but we had no time to go and see them there.

Beyond the Moros, in the wildest part of the mountains, live a savage race, who wear no clothing, build no houses, and cook no food; living on wild fruits and sleeping among the branches of trees.

Behind the town, extending away to the right and left

up to the foot of the hills, are fields planted with rice, bountifully irrigated by rivers and streams. I had never seen rice-fields before, so the scenery was new to me and undeniably beautiful. Great level stretches of vivid, velvet-green rice, broken by tall clumps of that most soft and feathery-looking of all foliage, the bamboo: by plantations of coco and areca-palms, the latter planted between the tall stems of the cocos: by Indian huts literally embowered among the foliage of fruit-trees and palms; and this landscape bounded by the range of wooded and grass-sloped hills inland.

While strolling on good roads through this green sea of rice, it is cheerful to drop upon a bevy of girls, half hidden by the tall green stalks and shaded by a solitary tree, washing their clothes in some pool by the road-side; nude brats, too, bathing and laughing merrily in the pool. I see in a book about the Philippine Islands that here children are much worshipped by their parents, and that a friar is very indignant thereat. "A mother will call her babe father, mother and aunt, and even king and queen, sir and madam, with other unbecoming and extravagant outbreaks of affection," &c.

In some of these little streams I saw boys fishing with very modest implementa, but, still, catching chubby little fish in plenty, which originally, I suppose, ran up from the sea. During the dry season the waters leave them in the lurch, and then they are caught by the hand or killed with sticks. And so strolling along, we come to a detached Indian village.

Indian pueblos are endless, covering an immense extent of ground, and as one village describes them all, I will inflict the necessary description upon you at once. Each house, or hut (excepting in the small concentrated town of Zamboanga, where the houses are not detached, nor raised on posts) is raised on high posts, and surrounded by their own plot of ground. This is planted with fruit-trees—mangoes, oranges, durians, pummelos, guavas, bananas, and

bread-fruit,—with coco and areca-palms, with (more rarely) coffee and cocoa, with bamboos, and occasionally with roses and flowering shrubs. Of course they have not always each and every one of these trees in their orchards or gardens, but walking along the road you will see all these in the space of ten minutes.

The following are some of the conditions on which the Indian is allowed to hold his land :—"He must plant useful trees suited to the soil ; sow wheat, rice, maize, vegetables, cotton, pepper, &c., in proper localities ; keep every species of appropriate cattle ; have fruit growing in his garden, and orchards round his house ; keep at least twelve hens and one cock, and one female sucking pig." A comprehensive list truly ! and of course not carried out to the letter of the law.

Their houses are built on a very simple principle, a platform on a few light high posts, and on this a bamboo framework, both walls and roofs thatched thickly with the leaves of the nipa-palm. The wall is chiefly all shutter, hung by hinges from the top, and the floor of the house is gained by a ladder. The well-to-do natives—and there are many of them—have large houses, with walls of wood or closely-woven bamboo laths, and a more civilized style of window with Chinese blinds. The space below, between the high posts, is inclosed by rough wattle-work, or else left open, when it forms a shelter from the heat of the sun for the cows, pigs, goats, dogs, and fowls, which all congregate there in a happy family.

One Sunday morning two of us started for a ride to the hills, and on landing, met the people streaming out of church. all dressed very smartly, the men with embroidered piña shirts, the women with their bell-sleeved piña jackets, tight clinging cotton or silken gowns, and slippered shuffling bare feet, while Spanish sailors, soldiers, officers in uniform, and a few ladies with Spanish combs and mantillas, gave variety of costume and colour to the throng.

We got hold of two ponies, dejected animals, which could not be persuaded to hurry themselves; but as it was mighty hot we were well contented with a quiet jog. For a mile or two we rode through rice-fields, then through a corner of village and orchards, till the road came to a river, over which we got by a ford. I discovered now that I had dropped my luncheon-bag, which, with sailor-like ingenuity, I had tied to my saddle. Soon we again came to the river, which this time looked deep, and only a path through a wood visible on the other side. I attempted it first, and got wet to above my knees for my gallantry; visions of crocodiles too began to float before my brain, for Philippine rivers are full of them, though perhaps there are none in this one. M., seeing what had happened to me, took off portions of his lower garments, and so came only wet-skinned across. Keeping along a path through woods for ten minutes we again came to this same twist-about river, which, this time, was shallow, and beyond it we found the road by which we ought to have come. Crossing it, we rode up the foot of the hills, a gentle rolling slope beautifully grassed, sprinkled with trees and bamboos, under whose shade cattle were lying; a hut here and there, and deep pools of water occupied by "water buffaloes," only their horns, ears, noses, and eyes showing above water,—a puzzling sight before you find out what it means. And so we got to the crest of a ridge wherefrom was a most beautiful view. From a height of several hundred feet we looked down on a glen, both it and the inclosing hill-slopes densely wooded with forest-trees, while beneath us a bend of brown river, rippled and frothy, rushed out from the woods, and vanished behind the ridge on which we were standing. Behind us lay the smiling land over which we had ridden; the grassy hill-slope dotted with trees and cattle, the plain with its brilliant cloth of emerald-green rice, varied by dark palm-groves, orchards, and woods; over the sparkling sea, the Basilian mountains looking intensely

blue in this blaze of sunlight, which same sun, by the by, has made us awfully hot, and glad we are to dismount, and lie down on the grass in the shade of a large and propitious tree.

And as we have lost our luncheon, we wonder if we can get some bananas from a hut we passed near by. And while we speak, lo! there comes a cheery-looking native up the steep brae from the glen below, carrying a large sugar-cane, the top of which he occasionally munches, and then again using the cane as a stick. We say, "Banana?" "Banana!" says he, "*si, si*," turns back and beckons us to follow. As we see no bananas below, nor even a hut, we for a moment are doubtful, but he insists, and so, leading our horses down the bank, we in a few minutes arrived at his hut, built a few yards from the river's edge, surrounded by palms and fruit-trees, shaded by whose overhanging foliage it lay hidden from our vision above. There never was such a pretty spot, and we were indeed enchanted. This native had, any way, complied with the law, for here we saw coco and areca-palms, durian and pummelo fruit-trees, great tall berry-bearing coffee-bushes, a plantation of fine young cocoa-trees, and splendid bananas; while fowls and pigs were plentiful, and a heavily-framed old buffalo was harnessed to a sledge piled high with coco-nuts and bananas. And as we sat in the deep cool shade, all round the sun shone brightly and hotly on hill-side and river, which, seen between the palm stems, rippled and swirled swiftly past near by.

Our host gave us bunches of bananas fresh plucked, tumblers of coco-nut milk fresh tapped, and soft-boiled eggs fresh-laid. People talk about "quaffing from nature's goblet" coco-nut milk, but in the reality there is an uncomfortable flattening of the nose, a dribble, dribble down the chin, a cold trickle, trickle under one's collar accompanying the process, which makes it nicer, after all, to drink it from the ordinary glass tumbler, if it can be procured. And unless you are very thirsty the milk is

rather sickly, but it is always cool, and if tired, does really refresh one considerably.

The natives are not so agile in the art of palm-climbing as are the South Sea Islanders; here every palm is notched for the feet the whole way up, by which they can easily climb.

Have I ever told you of the "durian"? It is a large, oval-shaped fruit, its rind covered with hard, sharp thorns. They have a disagreeable way of tumbling down from a considerable height—these durians—on whatever may happen to be below them, and when this happens, and it sometimes does, to be a man's head, the result to that man's head is disastrous. But the chief distinguishing badge of the durian is its horrible odour, so horrible that when you eat it you must hold your nose. But when you have eaten many, or only a few, they say one gets accustomed to this, and then of all fruit the durian is the most delicious. About which I cannot testify, for I *have* smelt the smell of a durian, and then I fled as one man. The pummelo is a gigantic orange, trying to imitate the flavour of a lemon; very good when raw, but still better when stewed. Our friend had some cocoa-nibs and coffee-berries in shallow baskets drying in the sun, for which he got what seemed to us a large price.

Sitting on an unroofed portion of the floor were the women and girls of the household. There was one old and ugly woman, but two others were decidedly pleasing in appearance, with long black hair worn loose, and there were several jolly little piccaninnies, and also a husband or two knocking about. They were all very curious about us, and it was amusing to cast one's right eye up, and catch them looking at you hard, and how at once they pretended to be doing quite the other thing. But this primitive shyness soon wore off, and the girls commenced running up and down the ladder, ostensibly on cooking purposes, joking and skylarking with their husbands, or whoever they were.

We, all this time, were eating eggs and bananas, which the girls fried for us, and talking barbarous Spanish to the men, but it was wonderful how we made each other understand. I rather flatter myself, however, as to the rapidity in which I can pick up, in canine fashion only though, the language of whatever country I may be in. We sat here for nearly two hours; it was too pleasant to stir from altogether, though a pretty bit of the scenery did go away in the shape of the girls, who went to their hut further up the glen. Next time we come to Zamboanga we intend starting earlier, penetrating further into the glen, to see what we can there see; the result I probably shall tell you about. There never was such an unexpectedly pleasant end to a ride, such a making up on the part of fate for losing me my bag with its flaskful of Madeira and its sandwiches of ham, such a dropping generally on our feet, for if this man had not come whistling up the brae just at the proper moment, then might we have whistled indeed for our lunch, besides missing the beauties of this valley, which were, as I have remarked, of two kinds. We told our host that in less than three months we should come back and see him again, and eat his eggs and bananas, whereat he, like a pleasant gentleman as he was, appeared delighted, and also with the coins that we gave him there and then.

Coming back my pony was incited to deeds of wonder by the example of another, whose boy rider joined us at the brae top, and we galloped down the glassy slope gloriously! And so back to the town by an excessively pretty road, bordered as it was the whole way with Indian houses surrounded with fruit-trees and palms.

Most of us thought Zamboanga a horridly tiresome place, and so it was in many ways, for it was too hot to walk with any comfort, and there was no friendly club to lounge in. We used to sit on chairs in the street outside a Spaniard's shop, who sold, among other things, beer.

The officers of the Spanish gunboats got up a native dance for us one night. We were ushered into a room, at one end of which a number of women, girls, and men—all Moros—were sitting. The music was played by girls and men, the former beating a row of small metal drums with a couple of sticks—a musical sort of tinkle, tunkle, tankle—while the latter beat gongs—a horrid row. From the crowd of squatting girls and women a succession of young girls came singly out in front and danced by themselves. They call it dancing, but it is merely a graceful and slow undulation of the body, turning slowly about on their heels or toes, waving their arms slowly around, the hands and fingers, too, going through a variety of movements, all of which to the initiated, I understand, have their meaning. One could have wished that these girls were prettier than, as a rule, they were, though a few had a *mignonne*, pretty expression of face. But they were beautifully dressed in short, very tight skirts of coloured silk, and tight little jackets spangled with gold—a dress which showed off every movement of their perfect little figures admirably. Gold and silver ornaments—bangles, &c.—were round their arms, ankles, and throats, their feet were bare, and altogether they looked very nice and girlish.

But this Malay dancing I think too tiresome, each girl subsides in a few minutes, and then comes another, after an interval of real or pretended diffidence, first getting her garments tightened and put to rights by the elder women, and yet, after all this preparation, they will shyly subside after not more than two or three minutes' dancing. An elderly, ugly lady was indignant with them, and bounded into the middle of the room with a flourish to show us and them what *her* idea of dancing was. Her people laughed and chaffed at her, but tankle, tunkle, tinkle, went the drums, and bang! bang! the gongs with fresh vigour, and she did dance very well no doubt; but what the tinkling of many-toned metal pots, and the

banging of many drums and gongs had to do with it all, was not easy to make out.

After the dancing the men went through an attack and defence performance with long spears and shields. This was very fine and exceedingly realistic, for it is the way these Moros fight in terrible earnest; but they were not allowed to continue long, as they easily get too excited. Their actions were very suggestive as they nervously went round and round each other, their naked feet never leaving their firm grasp of the ground for an instant, and still never motionless, their spears shivering as, held aloft, they now and then pretended to throw them, while great shields protected their crouching bodies.

The headman of these fellows had killed his two dozen enemies, and the weapon—a vicious-looking crease—with which he had despatched many of them was passed round for our admiration. The Moros here are, I believe, in the service of the Spanish, but in what way, or what for, I do not know. Their spears and creases are all poisoned, and cloth was wrapped round them in case of accident. The whole thing was well worth seeing, and very well got up by the Spanish officers—a capital lot of fellows—including a champagne supper.

At night naked figures, holding flaming torches in one hand and long spears in the other, are seen walking and wading along the beach spearing fish, a fine effect as the light shines on their tawny skins and casts a ruddy reflection on the still, dark water.

From Zamboanga, where we only stayed two days, we sailed and steamed in three days to Ilo-Ilo, a town built on the southern point of the island of Panay. It is an "open port," and consequently some English merchants are doing business there, chiefly in hemp and sugar. The province is one of the richest in the whole archipelago, and famous for its piña manufactures. The anchorage is in a narrow channel between the main island and a smaller wooded island, which they say is full of game, and the

rivers of crocodiles; our fellows went there and saw neither.

Behind the town great plains stretch away to a high hill range; these plains are planted chiefly with sugar and maize, with rice and the hemp plant. And need I say it? the shores are fringed with coco-groves, and from where we lie the town is hardly seen, being built back from the beach, where, close at hand, is an old red fort, dilapidated and tottering in appearance, over which floats the yellow and red flag of Spain, but the "arms" are cut out, leaving a vacancy, a round hole in the centre—emblematic of the Republic!

The town when we were there was filthy; dirtier streets I never saw. A small portion of the town is composed of Spanish-built houses surrounding an untidy plaza; the rest of the town is native-built, some of the population living over a marsh, flooded occasionally by the sea. In fact the town is not attractive, and the surrounding country hardly more so. Four miles away was another town, Jaro, where weekly markets are held, and where everybody from miles around come to sell their produce. I rode there on that day along dirty and not very good roads running between fields of maize and sugar, neither of which are so effective in landscape as rice. Small bush-trees, and here and there a small hut, lined the road.

In a large square in the town we found the market in full swing, the ground covered with little bamboo stalls, shaded by canvas or mats rigged up anyhow, and almost all kept by women and girls sitting behind their goods. Cotton and piña goods seemed to predominate.

The number of the women was quite out of proportion to that of the men, a circumstance which is usually noticeable in all these Philippine towns; and the general plainness of the female sex strikes one painfully, though now and then you see a pretty face, particularly so, of course, among the younger ones, from which condition they appear to escape in a very few years. They look as if they were

in the habit of sitting on each other's faces, which makes their profiles rather flat, and it is their full face which is often pretty and attractive. More, even I cannot say of them.

All the world was in gala attire, and very bright and clean they looked, with their tight-clinging short or long gowns, piña jackets, brilliant silk handkerchiefs round their necks, and velvet slippers, usually, however, carried in the hand. We went into the house of a mestizo who is very rich, having made his money by piña and sugar, of which last he has twenty different estates. He has a large Spanish-built house, great cool rooms, with polished floors, and little furniture. He sold us piña, about which some of our fellows went quite daft; it certainly is light and airy, but as I would rather see you dressed in something else I did not buy any. This mestizo, though so rich, wears the same style of dress as all his countrymen—shirt outside pantaloons. His daughter, not pretty, but with a wealth of black hair worn loose, had just come back from a school at Manila, and he was very proud of her and her Castilla accomplishments.

A ball was got up in his house by the English fellows of Ilo-Ilo for our amusement one night; but who was host, whether the owner of the house or the English, we did not make out. The Governor, Alcalde and all the swells were there, but our mestizo was dressed just the same as usual, and helped us himself at supper. His daughter was about the best dressed of all the mestizas there, and dancing much with a young Spaniard, who I fancy had an eye on attendant dollars, should he marry her. There were a great number of mestiza young ladies, and dreadfully dowdy and *gauche* most of them were. They were dressed in long loose gowns, shapeless and ugly, a large check red and white pattern being common, and pretty piña jackets. The mestizos were dressed as usual, an uncommonly nice and cool-looking dress it is too, this white shirt outside white trousers.

Among themselves they danced beautifully, but the attempts that the boldest of our fellows made with these native young ladies were most ludicrous, and always ended in rapid collapse. Ball-room and other etiquette is rather odd out here. The ladies sit on one side of the room, the men on the other, and if you want to dance you do not speak, but go silently along the ladies' row, jerking your elbow meaningly, until happily you get an arm therein, when, still not speaking, you may go off like a rocket, but you must not go out of sight, and when the dance is over, at once take your partner back to her seat. But at this ball it was not quite so bad as that; the girls did talk, and if they stopped you wound them up by saying "*Si Signorita, Oh Si!*" of course not having understood one word they had said, and on they went again. Our fellows had been initiated into some word full of meaning, which also set them going again. I understand this word, or sentence, meant "*You are my heart!*" much too touching, which, like other Spanish colloquial civilities, meant nothing, I suppose.

You know the eternal Spanish expression, don't you, of "*a la disposicion de usted*"? If you admire their house, or their breast-pin, they will at once tell you that it is entirely at your disposition, but still, if without further invitation than that, you do go to their houses, or go away in all innocence and joy with the breast-pin, well, then they don't like it!

The dancing was all waltzing, not the stupid whirligig which it is at home, but a real dancing of body, legs, and soul, and not simply of stiff legs, and *not* twinkling feet, as I have seen it elsewhere. They *do* dance to the music, flying about and whisking from one end of the room to the other with startling rapidity, now keeping their ground, undulating, swinging like pendulums, and now with a burst of music, they're away, all graceful motion, forwards, backwards, from side to side, any way, every way, all over the place, and don't at all try how many times they

they can go tee-totuming and twisting round and round each other like two wooden figures, in so many seconds. The girls were stocking-less, and wore the toe-embracing velvet slippers, which frequently came off while dancing, and the only wonder is how they manage to keep them on at all.

As in other countries one knows, these worldly-minded girls are justly proud of their little feet. But, after all, I have not been struck by mestizas, and their figures, from not wearing the conventional *thingumbob* of civilized nations, is far from being graceful, though I did understand our fellows to say, that its absence did not spoil the dancing.

I must say I got terribly bored with this ball very soon ; the heat was great, and if you did put your head out of the window to get cool, your nose was met with odours which were not pleasant, and drove you back. We had a pleasant drive back in the cool moon-lit night. We hear that this man has lost some hundred thousand dollars by a typhoon which swept over a part of the archipelago since we left, devastating his sugar plantations, but he is supposed to be able to "weather" it.

The richest man in the Philippines is a mestizo, and at Manila they say there are many very wealthy. The Chinese are not so very numerous here as they were at Zamboanga ; they tell me that throughout the Philippine Islands the Chinese are the "middlemen" in all trading transactions.

The roads about Ilo-Ilo were not nearly so pretty as at Zamboanga, which I like the best of all the places we saw in *las Philipinas*.

From Ilo-Ilo, where we stayed only two days, we went to Manila, steering between the islands of the archipelago, arriving there on November the 4th.

Manila is built on an enormous land-locked bay, whose waters are so shallow that large ships have to lie two miles from the shore. The heat was oppressive and damp,

and the water always at a temperature of 82°. Looking towards the town one sees domes, spires, red roofs, and ramparts rising from low ground, which continues in rear, and away on both sides, till broken against the sky by a distant hill-range. The town faces a mountainous coast, hazy in the day-time, but clear and purpled against the evening sky.

Manila being the capital of the Spanish Philippines and a great cigar-making place, I expected to find some resemblance there to its great rival Havana, but there is absolutely none. No large and crowded cafés with bands playing in the galleries above, and luscious drinks below; no *volantes* full of dark-eyed creoles and Spanish ladies driving round the plaza, with fireflies sparkling in their hair; nothing, in one word, of what makes Havana a charming place, while Manila is intensely dull. I shall not describe to you, therefore, this fourth-rate Spanish town, where the only amusements were to eat prawn-curries in an hotel, drink in a poor café, and drive in open carriages, which swarm, for everybody drives in the Philippines.

But the cigar manufactories are worth seeing. There are many of them, several thousand women working in each. It is a great sight; they sit on the floor, around tables raised a few inches from the ground, mounds of tobacco-leaves beside them, from which they roll cigars with wonderful rapidity. The noise is dreadful, caused by their chattering, and the beating of each leaf flat before rolling them into cigars. The majority of these women are young and unmarried, and all look scrupulously clean.

To see something of the country we drove out to a pueblo ten miles away, where was a cigar manufactory, in which were 10,000 women working. It was quite endless, section after section, through a great quadrangular low building, surrounding a grass-court, and all one mass of women, a square mile of women, an *embarras* of women,

nothing, nothing but women. A sort of penguin-rookery feeling came over me again, for the gangways through the sitting crowd were narrow, the noise deafening, and the air not, perhaps, quite pure. But it was vastly nicer to be stared at and grinned at by these girls than to be screeched at and have holes dug in one's legs by penguins, certainly. The heat in these great manufactories was, as you may suppose, considerable, and no wonder that the women like to dispense entirely with their upper garments, and no wonder, too, you will say, that when strangers are expected they are made to don them again! In the few factories in which men only work, this last operation is not required of them. The tobacco-officials were always very civil, and I carried away cigars sufficient to last me for two months. There is nothing disagreeable in the way they roll cigars here, as there is in some European (Spanish) factories I have seen. The cigars are rolled on wooden tables, and, excepting by the hands, do not touch the persons of those making them.

The country around Manila is quite flat, studded with populous pueblos, all possessing the same characteristics, and surrounded with orchards, but not to the same extent, or in such beauty, as at Zamboanga.

Priests are the practical rulers of the Philippines, and have an entirely devoted population under them. Their revenues are immense; they are very hospitable, keep the best houses, tables, carriages and horses in Manila, making a point of spending their revenues, as if anything is left at their death it always goes to some church or convent, whose revenues are already certain.

The mere fact of saying that these islands are Spanish is as much as saying that they are in a mis-governed, backward state. No enterprise, and only three "open ports" throughout the length and breadth of the great archipelago!

Earthquakes are constant, almost unceasing. In the old city of Manila are the picturesque ruins of a magni-

ificent old cathedral, shattered by a tremendous shock some years ago.

We left Manila on Oct. the 11th, arriving at Hong-Kong on the 16th.

Hear Wallace on the King Bird (p. 196) of Paradise! "The first two or three days of our stay here (at Arru) were very wet, and I obtained but few insects or birds; but at length, when I was beginning to despair, my boy Baderoon returned one day with a specimen which repaid me for months of delay and expectation. It was a small bird, a little less than the Thrush. Merely in arrangement of colours and texture of plumage this little bird was a gem of the first water; yet these comprised only half its strange beauty. Springing from each side of the breast, and ordinarily lying concealed under the wings, were little tufts of greyish feathers about two inches long and each terminated by a broad band of intense emerald-green. These plumes can be raised at the will of the bird, and spread out into a pair of elegant fans when the wings are elevated. But this is not the only ornament. The two middle feathers of the tail are in the form of slender wires about five inches long and which diverge in a beautiful curve. About half an inch of the end of this wire is webbed on the outer side only, and coloured of a fine metallic green; and being curved spirally inwards, they form a pair of glittering buttons, hanging five inches below the body, and at the same distance apart. These two ornaments, the breast fans and the spiral-tipped tail-wires, are altogether unique, not occurring on any other species of the 8,000 different birds that are known to exist upon the earth, and, combined with the most exquisite beauty of plumage, render this one of the most perfectly lovely of the many lovely productions of nature. My transports of admiration and delight quite amused my Arru hosts, who saw nothing more in 'Burong raja' than we do in the Robin or Goldfinch. Thus one of my objects in coming to the far East was accomplished. I had obtained a specimen of the King Bird of Paradise which had been described by Linnæus from skins preserved in a mutilated state by the natives. I knew how few Europeans had ever beheld the perfect little organism I now gazed upon, and how very imperfectly it was still known in Europe. The emotions excited in the mind of a naturalist who has long desired to see the actual thing which he has hitherto known only by description, drawing, or badly preserved external covering, especially when that thing is of surpassing rarity and beauty, require the poetic faculty to express them. After the first King Bird was obtained, I went with my men into the forest; and we were not only rewarded with another in equally perfect plumage, but I was enabled to see a little of the habits of both it and the larger species. It frequents the lower trees of the less dense forests, and is very active, flying strongly with a whirring sound, and constantly hopping or flying from branch to branch. It eats hard stone-bearing fruits as large as a gooseberry, and often flutters its wings, at which times it elevates and expands the beautiful fans with which its breast is adorned."

CHAPTER V.

CHINA TO JAPAN.

1875. WE remained at Hong-Kong till Jan. the 6th. Captain Nares and the first lieutenant were telegraphed home for the Arctic expedition, and left us. Captain Thomson was appointed Captain of the *Challenger* instead of Captain Nares.

Hong-Kong and Canton (where I stayed a week) are too well known to bear description from me, so we will be off to lands and seas out of the "globe-trotter's" way.

We arrived again at Manila on Jan. the 11th; sailed on the 14th, arriving at Zebu on the 18th.

The harbour lies on the eastern coast of the island of Zebu, and is one of the open ports. A pretty place; a range of hills running along close to the sea; a clean little town; the country between the hills and sea wooded with palms, bamboos and fruit-trees; queer little bamboo-cabins sprinkled below them amidst fields of rice and sugar.

Zebu is the place where the sponges, called "Venus baskets," come from. The pinnace, taking guides who knew the banks where they grow, went out to get some. The natives lowered their apparatus, a bamboo triangle, on two sides of which thirty-six fish-hooks are fastened. With this they always brought several up, once as many as ten. They were very fine specimens, the skeletons covered with brownish animal matter, but so that the skeleton tracery was not hidden, while the top is usually bare. One day's drying in the sun will take the animal

matter off, leaving the bleached skeleton clean. Another day the ship went out to dredge, getting plenty of Venus' baskets, stalked star-fish, and some new pentacrini from depths under 100 fms. Inclosed (so that there was no escape) within the sponges were small crabs, annelids, polyps, and shells. A second haul of the dredge brought up other sponges of a new species, shaped like a wine-glass; also among many other animals, a sea-urchin, with little cups at the ends of its spines. We got, for the first time, large specimens of these in the southern seas; hitherto only fallen-off spines had been found, and it had been supposed that the cup went into the shell, whereas the cup is at the other end. We used a new dredge which we got made at Hong-Kong—a half-and-half between a trawl and dredge.

We went to see a monument erected in honour of Magellan, who was killed on the small island of Maclan, which lies close off the coast of Zebu, and runs parallel to it for a length of several miles. The passage, through which we came, is very narrow, and edged with coral reefs.

I am well acquainted now with the remains, or the monuments over them, of some of the old conquering navigators. In the vaults under Lima Cathedral I have seen the skeleton of Pizarro; in Havana Cathedral, the tomb of Columbus, and now in this out-of-the-way part of the world the spot where Magellan was killed. As the quaint old account of one who sailed with Magellan tells us:—"This Isle of *Mathan* was govern'd by two Kings; the one of which refusing to pay Tribute to the King of *Spain*, *Maglianes* went out to reduce him. The *Indian* had between 6 and 7,000 Men, furnish'd with Bows and Arrows, Darts, and Javelins; which Army *Maglianes* attack'd with 60 of his *Spaniards* arm'd with Coats of Mail and Helmets. The Battel was sharp and tedious; but *Maglianes* his Heat and Courage carrying him in too far amongst the *Barbarians*, he was there first wounded with

a poyson'd Arrow, and afterwards thrust into the Head with a Lance, which ended the Life and Action of this Noble Commander."

Small trees near the shore were black with flying-foxes, hanging head down. As we approached they all flapped silently, like so many demons, away, after a whirl close to and around our heads. On the beach were flocks of curlews, and graceful white egrets, which I remember well first seeing wading among the swampy jungles on the Isthmus of Panama. We picked up from the surface of the water, where it was sleeping coiled up, a snake about six feet long, with an eel wound spirally round it.

If Zebu had not been so desperately hot, also if there had been fewer musquitos, we should have liked it better. During the day the sun made one helpless; the early morning and evening being the only time when we could enjoy a stroll or ride. Very pretty country behind the town—the roads and paths lined with thick-growing tall bamboos and flowering hedges; fields of cut rice, yellow with stubble on which natives and buffaloes were working; palms and bamboo-woods fringing the wooded hills in the background.

Nearer the town these palms and bamboos mingle with fruit-trees, chiefly mangoes, while on the grass beneath are great blue-coloured aloes, and the absurd little native huts built on low posts. Everywhere are pigs, dogs, fowls, and children, the last very much dressed as they were born. Dear little piccaninnies these, dark-skinned, with big black eyes, long dishevelled hair, and often a large cigar in their mouths, which, as you pass, they take out, the better to stare, puffing out clouds of smoke in a nonchalant manner. For everybody, from infancy upwards, smokes in "Las Filipinas;" tobacco being so cheap and plentiful, and smuggling, to make it cheaper, so easy.

One sees but few birds, a beautiful oriole being the most common, and a handsome red-brown coloured hawk with white throat, head, and breast. These last take the

place of gulls, flying about the ship and picking up food from the water with their claws, while on the wing. Some small flying lizards were brought to us, and an almost just born little monkey, a weak, shrivel-faced anatomy, clutching desperately on to a piece of stick, who met the fate the *Challenger* has always ready for her victims—drowning in spirits.

A small steamer came in and brought the official news about the accession of Don Alphonso, which we had been the first to bring privately, both to Manila and Zebu. So they had a "royal *fiesta*" day, the town was hung with flags; we and the small Spanish gunboats "dressed ship," and at night there were modest illuminations. Not that it the least matters to the natives who reigns in Spain; they cannot be better nor worse off as long as Spaniards and priests are their lords and masters. But the present officials are republicans, and they will be no loss.

They have the custom here of placing dead bodies just inside the church door and there leaving them uncovered, while everybody goes away. Two little children and a woman I saw there on different days, completely dressed in their best clothes, the woman holding a black cross. A startling sight to meet one unexpectedly, and somewhat shocking to the unaccustomed.

In a plaza of the town stands a large wooden cross on the site where was erected the first ever seen in the Philippine Islands, planted there by Magellan, before which once a year high mass is performed. A pretty scene at night this plaza—long rows of natives, chiefly young and old women, sitting on the ground with shallow baskets before them, filled with fish, fruit, and breadstuffs—each basket having its own lighted candles.

Zebu is a nice little place with several pleasant English fellows, and the country around possesses its own individuality in the bamboo woods, tiny native cabins, and primitive sugar-crushing machines—a buffalo turning a

cogged wheel which made the rollers revolve, between which each cane was passed three times; then one could drive and ride short distances in traps and on ponies, lent us by the English; but Zebu is not nearly so charming a place as, I think, Zamboanga is.

From Zebu, on our way back to Zamboanga, we went to a small island, called Camiguin, which took us 80 miles out of our way, and occupied two days' time; dredging and trawling on the way in 400 fms., we brought up some pentacrini, of which one was of the same kind as we got "down South," the others were the same as those we got the other day; besides these, there were immense numbers of small sea-urchins, &c.

The object of going to this island was to see a volcano which "erupted" in 1871. On the day and night before we got there we imagined we saw smoke, though there was only steam issuing when we got up to it. It has piled itself up in a great red heap with a ragged summit 2,000 feet high, on a mountain's side, against which the rear slope rests, while the front falls into the sea. All vegetation and cultivation for a great distance around were destroyed, as also a village on the shore at its foot, into whose churchyard it is now pushing its way. Some of us landed at its base, while the ship steamed on to a village three miles distant, off which we anchored till the evening. The two men who tried to get up the cone failed—too crumbly and hot altogether. The scenery from our anchorage was very fine, the colouring of the deep red cone, with steam escaping from the crater, and cracks in the side, against the wooded mountain—4,000 and odd feet high—behind it, and that again backed by another sharp peaked mountain 5,300 feet high and densely wooded to its summit. Since 1871 vegetation and cultivation again cover the steep slopes; forest above, and below plantations of Manila hemp, which is very much like the banana.

Around the small village were palms, bananas, and green swamp. A few white cockatoos, a green lorriquet or two

—both of Australian species apparently,—and a few other birds, dull-coloured little sun-birds, &c., were shot.

We steamed on to Zamboanga in the evening, where we arrived three days afterwards, on the morning of Jan. the 29th. But for the wicked *Challengers* there being no peace, we were away again at five o'clock that evening, for some small islands twenty miles to the eastward, off which, the last time we passed them, we took magnetic and other observations, in which we now wish to find what difference our cruise northward has made. That night we anchored off one of them; and got under way again at four o'clock next morning, first sending a party to land on one of the islands, where, during the several hours we were on it, we shot a good collection of birds, among them a small green parrot, some "Torres Straits'" pigeons, which, excepting the "nutmeg-pigeon," I think the handsomest, with their pure white and black plumage, of all wild pigeons that I know; also some gems, in the shape of little "sun-birds," the representatives in these eastern seas of the western humming-birds, with all their dainty habits, manners of flight, and with much of their weeness and bright metallic colouring. This particular bird had a metallic purple throat and breast, green head and neck, and a non-metallic dark red back, and bright yellow rump. The "trammel" net, which was laid out near the reefs, caught a large bass, a flounder, and a shark—in whose pleasant company one of the men had to dive, to clear the net of coral and rocks, on which it had caught down below. Though no pigs were seen, their presence was evident in the shape of hoof marks on the shore, and in great wallows in the woods.

Around the island, frigate-birds, gannets, and terns were fishing among splashing shoals of fish. The ship got some good hauls with the dredge in from 14 to 25 fms.—curious compound-ascidians, holothurians, &c.

Late in the evening we again anchored off Zamboanga.

The next day we had a most delightful ride up the valley, of which I said something in a former letter. But

we had no idea then of what we had missed by not flying manfully away from eggs, Indian beauty, and *dolce far niente* generally. Since we were at Zamboanga last, the dry season has set in; the rivers are much lower, the rice is cut, leaving fields of yellow stubble where were sheets of vivid green; and the roads are deep in dust, soft, and pleasant to ride on, if not so for walking.

Although I am somewhat tired of scenery in which palms, bananas, and other tropical fruit-trees form the one and prevailing feature, yet this long, scattered village road appears to me more lovely than before, with its orchards on both sides thick with palms and fruit-trees of many varieties, and high up, growing among the foliage as it were, the native cottages perched on the top of high posts, looking always picturesque if not always clean nor tidy. Then, topping the ridge which blocks the valley, we arrive at our friend's hut, who receives us with acclamations, fried bananas, and eggs. Then on, past his little plantation, past a hut, the only other one in the valley (so *there must live our Indian beauties!*), across the first bend of the river, into forest primeval and exquisite scenery.

The river winds sharply from side to side of the narrow glen, now quietly and slowly, now frothing along in a miniature rapid, at each bend touching the steep hill-side, or some face of precipitous, trailer-hung rock, then rippling sunlit and sparkling through the forest to the other side. These woods were beautiful, reminding me more of Brazil than anything I have seen for a long time; enormous trees, with thin buttresses running far up and out from the parent trunk, meandering, distorted and twisted, on a cruise on their own account; these and others, rising branchless and straight to a grand height, their thick stems and foliage, dripping a green arras of creepers, walling the river. Beneath these grew a not very thick undergrowth of shrubbery, small trees, and stemless palms with tall, far-spreading branches. The air was alive with the thrilling buzz of cicadas, rejoicing in their new skins, while the

old ones were still sticking under leaves and on the trunks of trees. You thought you had caught a cicada asleep, but it was only his empty outside. From the dense green cloud overhead comes the strange note of some unseen bird or beast; a chorus of melodious crows, a sound as of stones thrown along ice, a long, liquid whistle, a cross *hhrick, hhrick*, then the tap-tap of a woodpecker.

The water is crystal clear, except in the deeper pools, where it is a dark blue-green, and there was many a ripple and swirl which made me long for a "cast" therein; though, perfect for fish as it looked, we only saw small fry. But on another day we saw two natives fishing for, and catching, great eels. They were high up the stream; one man poked about under the stones with a stick, another man stood ready, and, when the eel rushed out, he "jigged" it by a hook at the end of a bamboo stick; and here too we saw some good-sized trout-looking fish. Flicking over the stream were swarms of dragon-flies, a red one, and another with metallic blue-green wings; pretty butterflies, too, of many varieties, were flying about on the banks, in the woods, and among tall pampas grass; and once, while just going to cross the river, we started a large lizard, which instantly took to the water, and scuttled across on the surface in a very aquatic manner, and away on the opposite bank. I believe it was the same lizard that I started on another day, in the same spot, but this time it disappeared in mid-stream, sank apparently—whether it meant to do so or not I cannot tell.

This glen was deliciously quiet and beautiful, and the forest vegetation a change after the endless coco-groves and fruit-tree orchards that we have seen so much of lately. We got about three miles up on our ponies, the path incessantly crossing the winding river, and leading through the dark woods between, till the stream, narrowing, became so rapid, rushing along the bottom of what was now a gorge, that the animals could cross no more. So we went no further. Here we met three natives with

a troop of small curs going up the hills to shoot and spear wild boar. One was armed with a spear, another with an old rifle, and the third had a basket slung over his back, in which to bring back the meat. We met them returning three days afterwards, with three cut-up pigs. They sell the meat in the town, where there appears to be a regular set of hunters; they are the only people who make use of this path and glen.

As we rode through the wood somebody shouted "Look!" and there we saw a troop of monkeys, jumping and running among the topmost branches of the trees overhead. We jumped off, tied our ponies to branches, and, quite excited, ran up the hill to keep them longer in sight. They were close to, and stopped to *hrrrick* at us, then bounded away, their track marked by the shaking foliage. These are the first monkeys I have seen in a wild state, except *the* baboons on the Rock of Gibraltar, but those I do not call "seeing monkeys." We saw some more close to our friend's hut, one cheeky beast sitting down on a branch, quietly eating—squinting at us the while—a nut or fruit. Many were shot at afterwards by our fellows, but they were usually too high up for the shot to have a fatal effect; though one fell down dead, and with it a baby, which appeared not a bit hurt by its very high fall, and was caught, kept alive for some days on board, and finally "spirited;" a weak, tame little creature, fumbling feebly at whatever was offered him. Another rather older monkey was caught by a native as it was attempting to cross the river, and brought to the camping party, who kept it tied for two days, when it was condemned to death and solemnly hung by two blue-jackets—a performance they reported as having gone off "very well, sir." These monkeys are of a rather small kind and appear to be in great numbers.

What a glorious bathe we had! Lying full-length on our backs in a "rapid," the cool water rushing against and over us with a pressure that made holding on just possible;

while beneath was a still, deep pool, rock over-hung, into whose deepest shade, though, none would venture for fear of possible crocodiles.

The next day a party of seven went camping up this valley, four officers and three men. I could not go for the four consecutive days they were there, but rode up twice and saw them. A buffalo and cart took the extensive impedimenta up to the ridge top, where they were lashed on to five ponies' backs, and the cavalcade proceeded up the glen, camping about two miles up, before which point I left them to ride back to the town, the last thing I saw being one of the bags—containing change of linen—dipping into the river as the pony plunged about, and the last thing I heard being the owner thereof warily anathematizing the individual who had lashed it on.

Leaving them there the ship went across the strait to the Island of Basilan, where, at Port Isabella, the Spaniards have a coal depôt on a small island adjoining the mainland, where is a village and fort, in which last they keep a large batch of convicts. We made fast to a rickety staging, and with the help of convicts—whom they lent us—our own, and native labour, we got one hundred tons of coals in by an early hour the next morning; in the afternoon again returning to Zamboanga.

The Spanish officials here have shown us great courtesy, giving us this coal, which they can ill spare, with their large fleet of musquito gun-boats, much occupied at present with blockading the Sulu Islands, to the southward of Basilan, whose inhabitants are given to piracy and dislike of Spaniards. This small island, where we coaled, we were told was full of harmless snakes and pigeons, so of course we saw neither. But the forest is very fine, and during a walk on good paths, we saw monkeys, flying lemurs, great moths, butterflies, and lizards of all sizes, ranging from the ugly "monitors," two feet long and more, running up trees, and crouching along the branches, to tiny little things not heavy enough to bend a leaf. Birds we



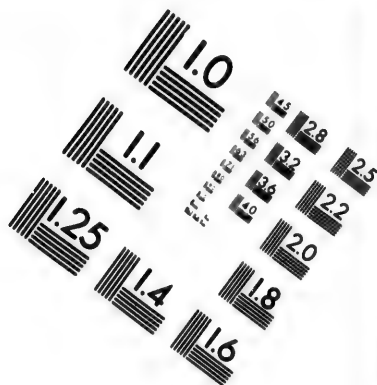
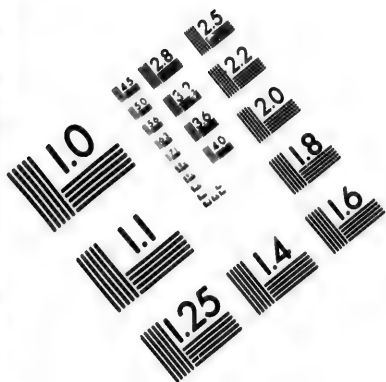
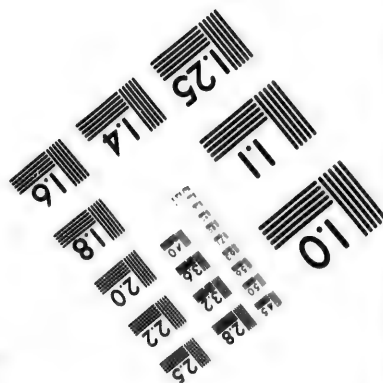
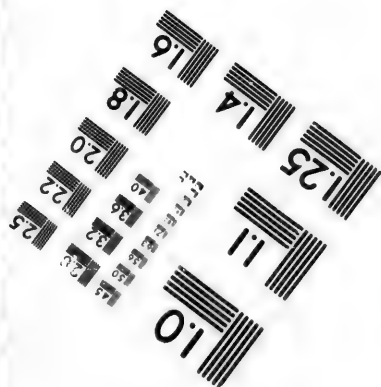
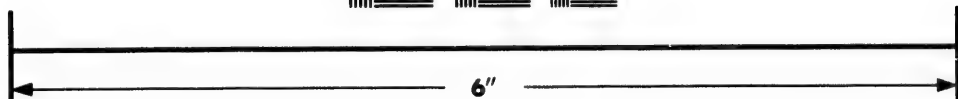
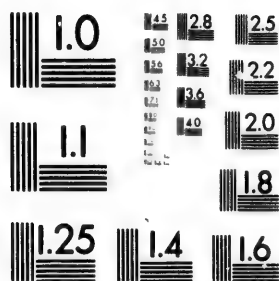


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heard, but saw few. They say it is not safe to go far from the village on the mainland, as the natives—Moros—have an inconvenient notion that the proper treatment for a Spaniard or stranger is to spear or crease him. But many of these Moros live in the village, in houses built over the water on piles, with rough plank communication between them. They are a fine race, with a very decided Malay look, broadly made, not tall, and with large heads. Some of these living here are so-called Christians. They are very fond of gaudy dress, when they *are* dressed.

I went with the photographer to their houses and we took some photos, but the shaky platforms were against success. One young woman whom we photo'd at Zamboanga was gorgeous in sky-blue silken drapery, wound picturesquely round her. Many of them seem very well off; splendid creases, brilliant silks, of which their gala clothes are always made, and heavy silver ornaments round their arms and ankles.

The camping party came back all well, having shot about 30 birds of 18 (or so) different species; among them were hornbills; a green racquet-tailed parrot, a Philippine species, and interesting as having been found (or a closely allied species) in the Arfac mountains of New Guinea; a fine kingfisher, a dark red-headed woodpecker, &c. These hornbills are the "melodious crows;" they keep in small flocks, always in the very highest branches, and therefore are hard to get. They are hideous, and there was not that excitement in stalking them which I felt while shooting their representatives, the toucans, in Brazil. The party shot, also, a flying lemur; these are seen slowly moving among the foliage occasionally, or taking a swooping flight—a puzzling apparition until you find out what it is. On the whole, there was a great absence of life in this glen, and two of the party were much disappointed at not getting up to the pig-ground, which was much farther off than we thought; they walked a long way up and saw nothing, not even a feather.

One day we saw a grand cock-fight being held close to the road; a crowd, four deep, surrounding a ring fence, within which was the cock-pit. Inside this ring, cocks were continually fighting, while hundreds of others, carried, embraced, and apostrophized by their owners, were waiting their turn outside. This cock-fighting is the great passion of the Philippino, amounting to perfect delirium. In every village there are a hundred times more cocks than inhabitants. "On the Puente Grande, at Manila, between four and five A.M., hundreds and hundreds of the shrill clarions are heard on all sides, and from vast distances; it is a string of signals passed from mouth to mouth from the Port of Banguay in North Ilicos to Manoy, the southernmost point of Albay. There are cocks at every corner, at every house, at the foot of every tree, along the quays and along the shores, on the prows of every coasting craft and canoe." To a Philippino his gamecock is everything; he scarcely ever leaves it, carrying it about with him, fondling it, stroking its feathers, comparing it with every other cock he comes across, and rousing its fighting instincts as preliminary practice whenever he meets another of the same mind—pretty often that! Each cock representing much loss or capital, for on them they bet heavily, often gambling away everything they possess, it is no wonder they make much of them.

In the native part of every town, in every Indian pueblo, cocks are tied to the houses by their legs, or under coops, or strut about free. Bright-feathered and beautiful birds they are too. Selection (unnatural?) must have done much in the course of years, for the plumage and particular points of a victorious bird are always eagerly noted, and looked out for among broods of juvenile warriors. Government draws a heavy revenue from this gambling mania, though gambling immorality they pretend to keep in check by only allowing cock-fighting on certain days,—Sundays and *fiestas*, which between them come mighty often—and in certain places called *Galleros*.

I went into some of these at Manila; they are always crowded—great excitement and heavy betting attending each fight. A double-edged, sharp blade, the size of a pen-knife, is fastened on to the natural spur, one successful dig with which settles the question between the two very quickly. There can be no doubt that two cocks fighting, particularly when they are old hands, is a very pretty sight. It is the perfection of scientific birdly warfare, though only when they have their natural weapons; but when spurs are lashed on, when the owner of the defeated, dying, though not yet dead, cock, plucks out its feathers in his rage, then comes in the element "brutal."

But I will not moralize; here the question enters not your head. Suffice it that you see the characteristic manners and customs of the natives; and so many cocks losing their lives, and so many natives their money, is their respective concern, and troubles me not.

All the working and carrying labour of the Philippines is done by "water-buffaloes"—and a horse is scarcely ever seen harnessed to anything except a carriage. These buffaloes originally come from wild herds in the interior. Short-legged, heavy-bodied, black-haired animals, carrying their heads low down, nose well in the air, and curved flat horns nearly horizontal. Their great enjoyment in life is standing back-deep in water, with only their heads, constantly jerked from side to side as they flap their fly-bothered ears, visible above the water. If they cannot get water, they wallow in wet mud; the signs of this dirty dissipation being visible on their mud-coated hides, when they look more like dyspeptic hippopotami than anything else. Patient, weary-looking beasts they are, slowly plodding along, with a rope through their noses, dragging a bevy of women sitting on chairs placed in primitive little carts, with solid creaking wheels, just the same as are to be seen in Spain and Portugal to this day; or else dragging sledges, formed of wickerwork between two long bamboos, the one ends of which they support by a heavy wooden

collar, while the other ends, and only the ends, grind horribly along the road; women also get carried about in these painful contrivances, the slowness of the pace and the friction of the bamboo ends quite setting one's teeth on edge. Our friend in the glen has to use these sledges, as a wheeled affair could not go down; we saw him sending off bananas, coco-nuts, coffee, and cocoa.

One day I saw a buffalo and sledge coming from a side-path on to the main road. Between these was a fence. The buffalo was unharnessed, the sledge lifted over by two men, and then neatly, if somewhat heavily, the buffalo jumped the fence. We heard from English people at Manila that these buffaloes dislike white strangers; and it has happened to them that while out shooting, a buffalo has "made" for them, which, judging from the peaceable look of the animal, is hard to believe; but then I remembered that at Zebu, while I was passing in a very narrow lane a buffalo ridden by a boy, that buffalo did suddenly stop, turn his head, and wink his eye in a manner that made the boy shout, and forcibly strike the buffalo's head, and that made me squirm into the hedge, and wriggle past with speed. A number of buffaloes, returning from their field labours in the evenings, ridden by men and boys, is a very picturesque and Philippinic sight.

One energetic individual went snipe-shooting for a couple of hours before breakfast, and at the expense of a dip now and then waist deep in mud, got about six couple every morning from the paddy fields.

The cemetery at Zamboanga was peculiar. In a high, long wall, were five rows of deep holes, one above the other. In these the coffins are placed, inclosed with lime; a slab, wooden, marble, or otherwise, closes the hole; on the slab is the name, &c. Many of these holes were empty, with remains only of coffins and bones left in them; from which we surmised that after a certain time the holes were cleared of their contents, and what they did with the bones we discovered by peeping into a small place, surrounded by a high

wall, which we found was the charnel-house, and within it grew one luxuriant shrub.

The pinnacle, dredging in the straits in shallow water, got some live red coral, other corals, and any number of good things. The coco-nut crabs are found here: those beasts, you know, which climb up coco-palms, and have the reputation of heaving heavy nuts at your head. Several were brought to us, great ugly beasts they are, with most formidable claws.

Here, too, the people are preparing for a royal *fiesta* day; along the village-road arches made of bamboo, covered with coco-leaves, and crowned with many flags, are being erected; numbers of little booths line the roadside, chiefly for the sale of liquor, and altogether they are going to be very merry. And so good-bye to the Philippine Islands.

Feb. 22.—To-morrow we shall be in Humboldt Bay, New Guinea—great excitement! But before we arrive you must come part of the way with me on our tiresome cruise there. We left Zamboanga on the evening of Feb. 5th; on the 10th we were just south of the Meangis Islands, between them and Tulus Islands; a strong S.E. current having drifted us further south than we meant to go. There in 500 fms., we trawled and got a great haul of crinoids, and other animals. About thirty pentacrini, of four different species, none of them, however, quite new to us. Some were pink-coloured, others light slate-blue. It is almost sad how very common to the *Challenger* these once rare things are becoming, and yet how seldom we have got them! In the trawl, too were several species of deep-sea fish, most of which we had got before in the Atlantic.

A canoe full of men came paddling off from the Meangis Islands. They had a five-mile paddle, and the wind was blowing pretty fresh. They could not talk Malayan, but knew that ubiquitous word "*tabac*," of which they got plenty in exchange for lories, numbers of

which they brought off with them, fastened to long bamboo perches by two connected wooden rings, one round the leg, the other round the perch. They were of a kind we had not seen before, and I think the least pretty—red, black, and blue plumage, but laid on too splashily for harmonious effect. For a week one was kept alive in the house on the upper deck; on the second day the rings were taken off, of which it took advantage by flying out and settling on the rigging aloft. It was pretty to see it flying about the ship. It was caught again in the evening. Every morning it was allowed to fly out, but, becoming tame through hunger, would come back close about the house, and on the perch being offered to it, would hop on, and be carried inside, where sugar and soft bread awaited it. On one occasion it was caught on a rope which was hanging overboard; every time the ship rolled Lory got a ducking in the sea, but was too frightened to do anything but clutch on all the more desperately to the rope each time it was ducked. But one evening it came not back, and was found next morning in one of the "tops," very sick, and died that forenoon, having evidently been hit by some rope.

Some time ago we had another on board, bought at Amboyna. The dearest little bird, as tame as possible, having apparently been brought up by hand, and that a woman's, for its great delight was to get on your shoulder, and there sip and lick away at one's hair in the softest and most ticklish manner; it was wanting what it had been accustomed to—coco-nut oil, with which the women dress their hair; but though it seemed to appreciate the flavour of ours, it certainly was not coco-nut oiled. This lory became too noisy, and was given away at Hong-Kong.

On the 16th we were right on the top of a reef—at least we were so according to the chart—but our soundings showed a layer of water 1,600 fms. thick beneath us. But we expected to find no reef here, as the one meant lies some way to the eastward, and is so marked on the chart.

Calms, or light winds further to the northward than we wanted them; rain, rain, heavy and light—that is the history of our cruise to Humboldt Bay. Twice we trawled, in 2,500 and 1,600 fms., with scarcely any result. On the 19th they begin to talk of Humboldt Bay; it is a dead calm, and so continues; though with a southerly current drifting us 20 miles a day. On the 21st still no wind; so we got up steam and steered for Humboldt Bay, 250 miles to the south-eastward.

For the last two days we have been passing quantities of driftwood, so thick and heavy last night that we had, for fear of the screw, now and then to stop. Gannets and noddies were flying about, and shoals of dolphins and sharks were catching small fish among the floating large trunks and branches. I never saw so many sharks congregated together before. All this heavy driftwood must have been swept here by rivers, probably swollen now, as it is the wet season in New Guinea.

Feb. 24.—Alas! here we are again at sea, and I, who had been thinking what a letter I should write to you of all that we saw in shapes of birds and beasts in this almost unknown land——

But I must tell you the story of our one day in Humboldt Bay, and the disappointment that met us there. At noon on the 23rd we made out the land ahead, wrapt in clouds and mist, which mist we had all the forenoon in the shape of rain. But in the afternoon it cleared up. As we neared the land the summit of the "Cyclops" Mountains showed out now and then purple through rents in white sunlit clouds, which, before evening, melted away, showing on our starboard bow a range of high green mountains; ahead, evidently the bay, with distant hills behind; and on our port bow Mount Bongainville, a mountain block terminating a coasting range of less high hills. It was quite dark before we got between the two inclosing headlands, and as we steamed slowly along, feeling our way with the "lead," we saw a light or two

flickering from different parts of the shore, and then a short row of bright lights, which we thought must be a village. We anchored for the night in 20 fms.

All that we know of this bay and its people is from the account of a Dutch surveying ship, the *Etna*, which was here in 1858. Since then, as far as we know, no ship has been here. The bay was discovered and named by D'Urville, who, however, did not enter it. The *Etna* was the first to do that, and they hoisted their flag over the "temple" in the village, and nominally took possession. They describe favourably, on the whole, the natives, though they say they stole anything they could, and for many days would not allow them to land, or enter the village, both of which, however, they eventually did. But as seventeen years have elapsed, and as we suppose that the Tidore and Ceram traders come here probably now, which they did not in those days, we hope we shall be allowed to do what we like (and we did *not* !).

That night, first one, then two, then several canoes together, with three and four men in each, came paddling round the ship. We could see by the light from our ports that they were quite naked, with green leaves and branches about their shoulders. They would not come alongside the ladder, but trade was inaugurated by somebody lowering a cigar by a rope over the stern, to which they tied coco-nuts in exchange ; and a small bag worked with fine fibre was exchanged through a port for a large glass bottle. They chattered and laughed loudly among themselves, and constantly shouted to us, something like "chigaw," which we wondering how they had got hold of the word, took to mean cigar. Very weird and savage they looked, these natives, as, standing up in their canoes, they came floating across the path of light thrown from our ports.

Next morning, awoke by a tremendous noise outside the ship, I went on deck, and what a wild, strange scene ! The ship was surrounded by canoes filled with an almost black, savage-looking, and perfectly naked mob. Here we

were in the midst of a shouting, seething crowd, each man of which was the *beau-ideal* of a savage. It was splendid, and something in our experience of life quite new, and not easily to be forgotten. How and where shall I begin describing them?

Their frizzly hair is worn in a stiff, thick mop, many inches long, and stained dull red; stuck in are long prong-combs, their handles ornamented with tippets of "cus-cus" fur, crocodiles' teeth, and small shells; on top of all, flicking about as they move their heads, are a number of large black and white feathers. In front, tied over the forehead, are wigs made of cassowaries' feathers, about eight inches high, sewn on to a band of plated fibre, painted red, white, and black, the ends of which, over the ears, are also ornamented with tippets of "cus-cus" fur. In a few cases the front of this wig was plastered with crimson flowers of the hibiscus, forming a high and brilliant semicircle of colour above a hideous and pitch-black face.

Their faces, ugly enough as nature fashioned them, they make still more hideous by artificial means, painting them wholly black, or in curved patterns, with a broad dark-red bar across the eyes, from temple to temple. The septum of the nose they pierce with a great hole, through which are thrust short, thick bits of bamboo, or boars' tusks of different sizes, some quite small, and curving down towards the mouth, others very large, and curling up to the temples on each side of the face, giving them a most ferocious appearance. Doré has drawn "El Diavolo" strangely like these savages here. I need hardly add that this nose ornament does not tend to beautify the shape of the nose, which is dragged down, and the nostrils opened to a hideous degree.

Large rings of tortoiseshell, one depending from the other, hang from the distorted ear-lobes. Necklaces and bracelets of boars' tusks, or rings of bone encircle their necks and wrists. Above the elbows are fillets of finely-plaited grass, or of some creeper twisted round like a thick

rope. In these they stick bunches of light yellow and green leaves, or of grass; also their vicious-looking bone daggers, made from the leg of a cassowary. Below the knee are more plaited fillets of grass or fibre ornamented with small cockle-shells, hanging from short pieces of twine.

The most picturesque part of their finery are the leaves tied to the necklace behind, and falling down the back. They are of two different kinds and fashions; one is a red-coloured, dark-edged leaf, worn in twos and threes, covering the shoulder-blades; the other is large and round, with such long, green stalks, that the leaves reach below the back. These last have a fine effect, trailing behind on the top of the water when the men are swimming.

Their canoes are long, very round-sided, and "falling in" at the gunwales; this is increased by other pieces of wood lashed on till the opening right fore and aft is only broad enough for one leg. The bows are stained red and black, scratched with figures of fish, &c., and rise in low peaks—sometimes decorated with tufts of cassowaries feathers. On one side are outriggers, the connecting poles being planked across over the middle of the canoe, extending a little beyond on each side; on the off side a rail prevents things falling off. On this staging the men not paddling sit, while the paddlers sit before and abaft on the gunwales, which, being so near each other, are both sat on at the same time. Laid on the staging are heaps of bows and arrows, and long fish-spears; some canoes have coco-nuts, plantains, great "fids" of black smoke- or sun-dried fish, sweet potatoes, and one had buckets, made of banana leaves sewn together, filled with water. Evidently this native thought that it was water we wanted. Trade began briskly at once; for a piece of hoop-iron they would give anything they had; but soon knives and tomahawks were offered them, and then hoop-iron fell in the market very quickly.

At half-past seven our anchor was up again, for we

wanted to find an anchorage nearer the shore. The canoes were crowded round the stern and sides of the ship, and directly the screw began to turn, up all the savages sprang in their canoes, snatched their weapons, drew their bows, and pointed their arrows, more at the invisible screw which was churning the water, than at us leaning over the taffrail or walking the bridge. But it looked uncommonly as if we were going to get a flight of arrows about our ears. I think most of us on the taffrail bobbed, and I am certain that those on the exposed bridge felt a spasm of unhappiness.

As we moved off, and simultaneously with their warlike actions, they all joined together in a loud, long-drawn shout of "Oh,—'h—'h!" one man starting it, to be taken up in chorus by nearly 300 more. A few conches were blown, and I think this note of theirs, which they uttered whenever startled or frightened, perhaps also as a note of warning, is in imitation of the conch. Our musical people say it is the "G" note. Well, away we went, slowly steaming in for the land inside the Western Cape, accompanied on both sides by the flotilla of canoes, paddling away close alongside. We counted 67 at this time, with an average of four or five natives in each, making about 300 of these wild-looking devils, each man of whom nearly might have sat to Doré as a study of that black individual aforesaid. It was really a fine and novel sight, and gave one an immense idea of being in savagedom.

Fine scenery within this bight, and the green of the forests wonderfully rich. From the Cyclops Mountains, whose back and edge are on our left, and tumble sharply down to the shore from a wooded height of over 6,000 feet, a low spur shoots out, ending in a high knob, Cape Caillé, which, bending inwards, incloses a small and sheltered bay. Close behind us are two small islands, and beyond, circling away inland, the wooded shores of the basin, hill-surrounded, here and there whitened with the spray of a heavy surf.

While steaming in we saw a small village a little way down the near shore, and when inside the bight, two more close to us, with groves of coco-palms on the shore behind them. All these villages are built over the water on staging resting on piles. The *Etna* talks of three large villages, one on the S.E. shore, and two more on the N.W. shore, where we are now; and says that one alone of these contains ninety houses. We only saw these three, which are all very small, the largest containing about ten houses, with roofs going up in a very high peak.

The water was very deep, and after searching about for some time, we finally let go our anchor in forty fathoms, followed by a loud burst of "Oh—'h!" from the savages. Quite a solemn and very deep sound it is, and most effectively alarming. We at once hoisted our steam-pinnace out, and other boats, all ready for at least five days of surveying, and shooting all sorts of strange things. A packed mass of canoes all round us, and trade going on furiously; and noise! It was frightful, every one of them was shouting and yelling like mad. Not one of them came on board, and no persuasion would induce them to do so.

Soon after we anchored two surveying officers went away in a gig, an armed cutter following to take care of them, and landed on one of the islands where was no village. A few canoes left the ship, and followed as if to see what they wanted; the natives were quite civil, and after the "sights" had been taken the boats returned without having seen anything to alarm them. Later, three boats went away; one with an officer "sounding;" another with three naturalists, who wished to land; and another with the Captain and Professor; the Captain having given everybody orders that utter forbearance was to be shown if any of the natives showed a disposition to fight or be unpleasant.

Just before noon they all came back, and what a change o'er the spirit of our dream! The officer sounding, who

was not attempting to land, was laid aboard by a canoe, the savage in which drew his bow to the arrow's head, and made signs that if he was not given something he would shoot, going through a most suggestive pantomime of an arrow through the heart, and the owner thereof falling back dead—very pleasant! To quiet him he was given a knife, and they got away from the clutch of the canoe without showing even a rifle as a menace, for, mind you, all the boats were "armed," every man had his rifle; but the brute kept on following, keeping his bow bent, and close to, too; so H. thought he had had about enough of that, and pulled on board. On the way back he met the naturalists, and told them they had better not go on, but they did, and made for a patch of cocos, where however, there were no houses visible. But before they got there they too were laid aboard by two canoes, one at the bow, one at the stern, and the same scene rehearsed as with the other boat,—bows drawn at a foot's distance, &c. Then the canoe which was holding on to the stern made a grab at a large tin botanical case, containing two trade knives and some other things, got it, and both canoes quietly sheered off. The naturalists, also, thought this was enough, and they, too, pulled straight on board. What could they do? The natives must have seen the shot guns, for they were carried in hand; query, did they know the use to which they might be put?

And here comes the Captain as well, having attempted to land near a village. But the natives evidently did not mean to allow it, making menacing gestures with their weapons, and waving them away, so he also came straight back, but on his boat the savages made no unprovoked assault, as they did with the other boats. In the last case, the natives were on the shore, and did not wish our boats to come near the village, jealousy of their women being certain. All this took place within half a mile of the ship, almost under her nose. Well, what was to be done? The Captain decided to leave as soon as possible, and gave

everybody who had been away great "kudos" for their behaviour.

And now for another side of the story.

Early in the afternoon, by way of a forlorn hope, the Captain, with three others, again tried to land, this time at another place, and near a village, the closest to us, primarily with the object of letting W. get a good sketch of it. They steamed straight towards the village in the steam pinnace, no canoe seeming to care, for none followed, and got almost alongside the staging, so close that one of the blue-jackets jumped on to it, but was immediately waved excitedly off by some natives, who appeared out of the huts, one of whom drew his bow. Just then M. heard a bird whistling on shore, he imitated the bird, pointed to the woods, tapped his gun, and doubtless looked very meaning, for they at once understood what he meant; one man jumped into a canoe, came alongside the pinnace and paddled M. and another on shore. With several natives he walked a few hundred yards up a hill among the woods, shot a beautiful little fly-catcher, with a bright blue ring round the eyes, light-blue feet, and dark-yellow tufted breast; also a green lorriquet, the same, or nearly the same, as we got at Cape York. The natives were perfectly civil—much excited about the gun and the birds falling. They handled the gun, and M. thinks from their manner that they certainly had seen a gun before, and understand its use.

And (oh! how it "riles" one to think of it!) close to him there got up three "Gorra" pigeons (great crested pigeon), superb birds, as large as peacocks, one of which alighted on a branch; he fired at it, but had unfortunately only No. 8 shot in his gun, which was harmless. He thinks, too, he heard the "great" bird of Paradise, and all this in a distance of a few hundred yards from the shore! What disappointed visions of what we might have found in these unexplored woods rise in one's mind! The Captain and Professor landed directly after him, paddled

on shore by the natives in a canoe. They also went a few yards into the wood, meeting M. on his way back.

In the meantime the pinnacle was lying off, and W. got a sketch, of which he has made a pretty and true water-colour. The staging of this village is not connected with the land at all, but the water between it and the shore is only waist deep, and the natives who went with M. came on shore wading. There were eight huts in this village, one common staging to all, a rickety, loose affair it was too. They saw four women, who kept their distance, and were dressed with short matted kilts. The *Etna* mentions canoes full of women paddling alongside their ship, until the "dunkeln Schönen" were peremptorily made to vanish by their male relations. We saw none in canoes.

Well, nothing could have been better than all this, still we kept to the retreating policy, which was the safest, though one would have liked to settle the question whether they were really inclined to be unfriendly or otherwise. The forenoon display of native temperament was decidedly disagreeable, the afternoon as decidedly agreeable. There is no doubt that our people returned in the forenoon thoroughly frightened and impressed with the hostile sincerity of the savages, who bullied and robbed them with impunity, and probably the few individuals who thought they were only "making believe" would have been the first to have got an arrow shot through them, if they had tried to test the question further. There certainly was no concert between these outlying canoes and the crowd surrounding the ship, and not far off, who were, however, in a very excited condition of mind, constantly drawing their bows and uttering their shout, when not quite understanding something or other; as, for instance, when the steam-pinnacle dashed alongside they having to get out of her way in a hurry; also, when the screw first revolved in the morning; when the anchor dropped and once evidently as a joke, though rather a grim

one, when an officer offered a knife for a set of bows and arrows, the savage first drew the wished-for arrow to its head and aimed straight at him, gave him a shove, then quietly handed the bow and arrows over. I certainly believe that with tact and caution, a large ship in their eyes as a background, and with the knowledge which we would have imparted to them as to what could be done with a gun, we might have done what we liked, and added largely to our present knowledge of this part of New Guinea, its people and fauna.

But I have lots of things yet to tell you about the savages. As I said before, they are absolutely naked, their colour a dirty sooty-brown, quite unhandsome; and a skin disease, common among all these islanders, is common here too, and has the effect as if white pepper or dust had been sprinkled over them. They are not all got up in the toggery I have described; many are not painted at all, and have no shrubbery about them. The boys and young fellows shave their heads clean, excepting a narrow "fore-and-aft" ridge on the top of the head. Their noses are not pierced either, and many of them have quite pleasant faces. Clean-looking, well-built young fellows these, with grinning white teeth, a pleasant feature which they afterwards spoil, as they do all their features,—their nose by a great hole, their teeth by chewing betel-nut, and their faces by hideously painting them. Their shoulders are marked with great lumps—in lines and curves—which they produce by intentional gashes.

The bows are about six feet long, a few neatly grafted over with plaited fibre, slightly carved, and strung with a strip of bamboo. The arrows are also made of bamboo, unfeathered, tipped with fire-hardened wood, cut into a series of sharp barbs and ugly notches; the whole tip being more than a foot in length. Fancy having that stuck into one! We perceived no poison on any of the arrows which they sold us. Sometimes on the extreme tip is a piece of bone, stuck on so that it will detach from the

arrow's shaft when inside you. I got two bows and about thirty arrows, which, if ever they reach home, we will make a trophy of. These arrows are about five and a half feet long. Their daggers are made from the leg-bones of cassowaries, a piece from which is sliced off, the rest ground into a sharp point. Their only spears are for fish; sharks' fins, a small, dried, hammer-headed shark, and the great black "fids" we saw in their canoes.

In one canoe was a small pig, and thereby hangs a tale. Our boatswain and carpenter, old sea-dogs, say they will buy that pig, in which they can see *some* use, much more than in arrows and other trumpery "curios." So in exchange for a ninepenny axe they get it, and as they bear it "forward," are gloating over their prize and coming feast, when, hoop-la! the *leetle* pig escapes, flies screaming along the whole length of the maindeck, rushes past the astounded sentry, into and across the captain's cabin, and in one mad bound is out of the port astern, and overboard, the next minute again in the possession of his old master, who won't give it back, thus securing both axe and pig. The bos'un and carpenter have not heard the end of that story yet!

The natives did not care for tobacco, and preferred anything before it, but they were chewing the betel-nut, accompanied as usual with leaves and lime, the last kept in small, narrow gourds. We saw no signs of trade with civilized people, excepting a rusty old axe. They had numbers of stone axes, exactly the same as those of olden times, and those, too, of more modern use, as Maori's, Fijian, &c. They were more keen for our trumpery axes than for anything else; it is almost cheating them; these axes cost ninepence, just about what they are worth, and no more. They would not look at our cotton prints, or stuffs of any kind—gorgeous red handkerchiefs not the least alluring them. Several small knick-knacks were in the canoes, drinking cups of bamboo, narrow waist-belts, not for dress, but for ornament, worked with small, white

shells on a black ground, and haversacks neatly made of fibre-twine. One of our officers found a large coil of fishing-line missing from his cabin, which was hung up near the "scuttle," and had evidently been hooked off and out by a spear or arrow from the outside, a reach of three or four feet; they also had got out an iron key, used for screwing the scuttles in. A clever performance altogether, and which deserved the success it met with.

Every canoe had a fire in it, but no cooking was going on. Some of the men wore a large heart-shaped breastplate, made of a double series of boars' tusks, a portion of the front ornamented with small shells, and that little vermilion seed with black tops which we in our youth delighted in so much. This breastplate of white boars' tusks and vermilion seeds has a brilliant and striking effect, worn on their dark skins. It was the only defensive article we saw among them, and would, I fancy, stop an arrow. They were much astonished at old Sam, shouting, yelling, and laughing vociferously when he jumped on to a port close to them, and a small cur was passed from one canoe to another, till it arrived at the one directly under the port, when they held it up and introduced Sam. When much amused, these savages slap their thighs with a hearty smack, and they laugh, too, most heartily.

When we heard we were going away that day, trade became more active than ever, the natives from outside canoes jumping out and swimming, amidst the crowd, to canoes closer alongside, holding bows, arrows, &c., in their hands. They are very expert at swimming and diving, anything dropped overboard was instantly dived for, and got before it had gone a long way down.

The one very suspicious part of their conduct was that they would not come on board, whereas when the *Etna* was here, though they had never seen a steamer or so big a vessel before, yet they swarmed on board her without hesitation, showing no fear at all. Some of us put this change in behaviour down to kidnapping, which suspicion

was more or less confirmed by the fact being now related that the Governor of Ternat  said kidnapping was known to have been perpetrated here; and that he knew the perpetrator! It also appears that an English merchant "master" (whom we met) said he came here every year. If he does he leaves no mark, for we saw no signs of trade at all, excepting one rusty axe. Traders would come here, if at all, for birds of Paradise, or b che-de-mer, or sharks fins, or pearl shells. Of these we only saw sharks' fins, which doubtless the natives eat themselves. If these natives had been accustomed to trade with Europeans, they would hardly have been so very anxious and eager for common hoop-iron, which however they refused to accept, as soon, and as long, as axes and knives were being offered to others around them. None of their arrows were tipped with iron, as the Arru islanders' are, and their canoes had all stone hatchets, evidently in every day use; but they must have some notion of working iron, or else would not be so anxious for the raw material, which by the by is what they mean by this doubtful "chigaw" word.

We saw no blunt-headed arrows like those with which the Arru natives knock over the Paradise-birds, but one native here had two old and very much frayed plume-feathers in his mop. The other feathers they wore were the white cockatoo's, the upper part cut off, and the black top of another feather inserted in the shaft. The few canoes which came close around us on the first night certainly showed no signs of fearing to be pounced on, or grabbed in any way, always excepting their persistent refusal to trust themselves on board, but this they also would not do when the ship was hedged in with canoes, 80 of which we counted at one time.

Anyway, that one night and day in Humboldt Bay was most interesting, and delighted I am that we went: it is one day to look back upon with pleasure, as a day of total novelty—a glimpse of New Guinea and its savage people—among a dreary round of days at sea, which the sooner

forgotten the better. A most beautiful but very hot day it was, that we were there; very fine weather we had also for two days before, and for two days after; so what the "rainy season" is about, it alone can tell, and so farewell to New Guinea!

Ingloriously routed out of Humboldt Bay, we steered for the "Admiralty Islands," 300 miles to the east-by-northward.

All that we know of this group is that Captain Carteret discovered them in 1767, sailing along the southern shore of the only large island in the group,—50 miles long by 20 broad. The other islands are all quite small, and situated to the eastward and southward of this big one. 25 years later D'Entrecasteaux sailed along the northern coast, the north-west end of which he sketched from what he could make out of it from the sea, and it is there that we hope to find an anchorage. For neither of these Captains sought for one, and, as far as we know, no European has ever landed on these islands. Nor had they any communication with the natives, who in their canoes came timorously near D'Entrecasteaux; but by way of making them draw nearer, he fired rockets, set lighted candles floating on pieces of wood, on which he placed nails, as presents, all which, however, effectually frightened them away.¹

Seven mortal days we were doing these 300 miles. Calms, light head, or fair winds, occasional heavy showers, great damp and constant heat, a despairing feeling of never no more getting anywhere, all combined, produced depression of spirits and *ennui*. On March 3rd, we were somewhere off the land, but tremendous rain and thick weather prevented us from either seeing it or getting "sights," so for some time we had to lie-to, and wait till

¹ There is no record, at the Admiralty, of any ship having been here, since these two mentioned, until 1874, when the *Alacrity* cruized off the southern coast—of which we were ignorant at this time.

it cleared. Then on we went with steam and sail, determined at least to make out our whereabouts before dark. At two o'clock we saw the land ahead, and a good land-fall it proved to be. As we ran quickly past a number of small low islets lying off the main island, we saw cocos growing on some, and canoes inside a reef,—an angry white line of breakers and foam between a dark-coloured sea and half mist-hidden land behind. Two of these canoes came paddling desperately towards us, but we had no time to stop, and ran on, more canoes intercepting us from another island ahead, the natives in them shouting to us and holding up pieces of tortoise-shell as we passed close by them.

Just at dusk, followed by all the canoes, which had hoisted their sails, we rounded the end of the reef, and anchored inside it, between the mainland and an inhabited small reef-island. We tried to persuade the canoes alongside, but they made signs that the sun was down, and that they were going to sleep. And soon they all left, going to the island nearest us.

The first thing next morning, many canoes were alongside, though in nothing like the numbers at Humboldt Bay, where, probably, if we had stayed longer, we should have seen many more than we did. Here there were never more than 20 around us at one time during our whole stay.

Both the natives and canoes are different from those at Humboldt Bay. These savages are rather lighter coloured; their hair is worn in a different way, their weapons, dress, manners, and ornaments are all quite different. They showed no fear or distrust of us, several willingly coming on board the first morning, and though they make noise enough, the deep, musical shout of the Humboldt-Bay savages we heard not here at all. Their canoes are the best built we have seen, excepting the large double canoes of the Friendly and Fiji Islands; and to our surprise, there are more evi-

dent signs of some trading vessel having been here than there were at Humboldt Bay. Tortoise and pearl-shell they held up to us, as if they were of course what we had come for, and many of them had a small, iron-edged adze—a short bit of good iron fastened on to their own-made wooden handles; this iron is very much better and thicker stuff than we give them, which is simply the common hoop-iron for fastening casks. But these are the only signs of trade that we can at present see.

As dress they wear a shell, or a strip of their own-made cloth, made probably from hibiscus or some bark—again unlike the Humboldt-Bay savages, as they also are in wearing no shrubbery about them. These natives are never absolutely naked, though the shell-fashion hardly deserves the name of dress, certainly; neither, I believe, is it intended, or worn, as dress. Their ornaments are chiefly made from shells, bones, and teeth, the last belonging to some animal we have not yet made out. A few wear tortoise-shell earrings.

In the canoes they had fish, and numbers of spears, some entirely of wood, both barbed and unbarbed, others tipped with a large, sharp piece of obsidian, sufficiently ugly-looking javelins; but they have no bows and arrows, which is very remarkable. Vastly pleasanter enemies these savages here would make than those in Humboldt Bay; the javelins would at least make a clean hole, but those long barbed arrows—ugh! Their knives, too, are made of obsidian, with sharp-pointed wooden handles, and their hatchets, when not of iron, are formed of shell, the convex part cut off, and then fixed on to wooden handles, in the same way as the iron.

Their hair, which is very seldom stained, is worn much like the Arru islanders', either cut more or less short, or worn in a great, loose, fuzzy mop: this sometimes gathered back by a strip of bark-cloth, tied round the back of the head.

The canoes are very long, 40 to 50 feet in length—and thick at bottom, and are either burnt or cut out of a single log; the sides are formed of narrow planks, built straight up, lashed together, and caulked with a lime cement, made of shells and coral; on one side are outriggers, rigged far out, and fastened to the canoe by five or six connecting poles, extremely neatly. On the other side, two stout pieces of wood stick up at an angle. These, the midship portion of the canoe, and for some distance towards the outrigger, are planked over with well-cut wood. The bows and sterns are decked with shells, in the same manner and of the same kind as were thickly strung on the bow and stern of old King George of Tonga's great double canoe.

But I had better tell you what we did from day to day.

March 4th.—To find out how the "land lay," as regarded the natives, the Captain and two others went to the nearest island, where there are coco-palms, and a village visible under the foliage of bread-fruit and other trees. Opposite the village the natives waved to them not to land just there, so they went a little further on and landed. Then with many natives, who met them on the beach, and were as civil as possible, they strolled about the woods, and shot a few nutmeg-pigeons, lorriquets, and small birds. The natives, though rather frightened, appeared to understand all about fire-arms. Slight jealousy they showed about their women this first morning, men always going ahead of the party when nearing a village, of which there are three, and making the women skedaddle into the huts. From a string tied round the waist, these wore in front and behind long bunches of yellowish-coloured stuff, made of split pandanus leaves, or of some fibre, but it was neither woven nor plaited in any way. The Captain gave a tall man, who appeared to have some authority, an old white hat, which he put on, and thus proved a good distinguishing

mark. We think this man is a chief, as they all pointed to him and said something like "Otto."

Well, as the natives appeared to be so friendly, we determined to stop for some time, survey a little, &c. In the afternoon, a large party landed on island C, intent on nutmeg-pigeons. The Captain, with a few others, went in the steam-pinnace towards the mainland, guided by "Otto," whose canoe, full of men, we took in tow. They were delighted at the speed we went, faster than they had ever gone before, I suspect. It proved to be a small island, E, to which they were guiding us, and their reason for so doing was soon evident in clouds of nutmeg-pigeons flying about it. Quite tiresome it afterwards became, this idea of theirs that it was always pigeons we wanted; but to-day



A, B, C, D, small islands on reef, A and C inhabited. M, N, O, V, the places on mainland we landed at. V, village on mainland. + where we nearly got on shore. Length of reef about 6½ miles.

nothing could have been more fortunate; it proved a grand discovery, and productive of much gastric delight to us poor salted, half-starved sailors. We landed and shot, shot, shot; shot till all the ammunition was exhausted, and we were sick of the slaughter.

The island is quite small, not 200 yards in diameter, with a few large casuarina, and buttressed old trees; the rest are smaller, but so completely laden and covered with

a convolvulus creeper, as to be quite hidden and swamped by the overmastering foliage of this ubiquitous parasite. So close was this creeper over the whole island that it formed a thick and continuous roof stretching from tree to tree, and in this dense and matted foliage above us the birds must have been nesting. A flight of passenger-pigeons could scarcely have been more numerous in this small space, than these nutmeg-pigeons were here. One had but to stand still, and go on shooting *ad nauseam*. Broken eggs we found on the ground, and a native gave us a whole one, probably got out of a nest; two other eggs were picked up, one a largish blue-green one, the other a large white one, which last we suppose to belong to a "megapodius," a small one having been shot on this island afterwards. Three guns shot about 30 pigeons each in far fewer minutes. Their colouring is almost the same as those we shot at Little Ké, but they are much smaller, only weighing 18 or 19 ounces. We started back in a squall of wind and heavy rain, and the natives would not venture out in their canoes till it cleared. They made signs that they had nothing to eat, so we gave them a bagful of biscuit, whereat they were mightily pleased. Everything on the other island had gone quite smoothly during the afternoon; the natives quiet and civil, and the women not hiding themselves.

March 5th.—Over to Pigeon Island (E) in the pinnace with a shooting party. From there two of us pulled in the dingey to the mainland, a few hundred yards. Just to leeward of the small island there is a strip of beach, but close on the right and left the water is fringed with heavy mangrove. We walked straight up through the woods, chiefly composed of tall, thin trees, and the highest pandanus-palms I have ever seen, with aerial roots falling down from a great height.

The ground was very swampy, and in a short while we came to a sago-palm swamp; then thicker, heavier woods

beyond. We heard birds, but seeing them in these tropical forests is almost hopeless. Close by, one hears them twittering, and you watch and watch till your neck is cricked, and still see nothing. We shot a curious yellow-spotted little bat. The ground creepers are very trying to the temper, very! One most abominable creeper is common here, covered with small thorns; away from that if once caught, you don't get in a hurry, or without torn clothes, scratched skin, and your conscience lightened by many an anathema.

This swampy ground is just the place where in the Arru Islands I should expect to find the little king-bird of Paradise; frequently I thought I heard its stifled "whreeing" whistle, but that was quite unlikely to have been the "goby-goby." Then on board the pinnace to luncheon, again landing to renew the slaughter. With half-a-dozen shots I had enough of it, and devoted myself to small birds. Two lorriquets, two tiny yellow sun-birds, and handsome night-herons, rewarded us after much patient watching. A man who aimed at one pigeon, found on the ground, as the result of his shot three birds, two pigeons and a beautiful blue "Sultana," which, being a wader, one would think had no business up a tree. We discovered small wild nutmeg-trees with fruit, on which probably the pigeons feed, though we found only a large blue berry in their crops. We brought back 230 pigeons and the number left, clinging to the branches, dead and dying, must have been great. It is of course nothing less than butchery, but the pot knows no fine-drawn distinction about sport, particularly when that vessel has been at sea for a long time before.

The Captain was at island C again, giving presents to the natives, and trying to get photographs of them. He had the patience to stand there for four hours, a shouting mob around, all twitching his elbow in turn, clamouring for something more or something else. As was to be

expected, they got excited, their anxiety to get an axe or knife making them angry if they did not, and jealous of those who did. One man, in his rage, was seen to throw a spear right into a hut, among the women and children. The women, who were clustering behind the men, had no chance of getting anything, and it was a bundle of beads thrown to them, snatched from them by one man, and again snatched from him by another, which was the cause of this spear-practice. Most of the men were carrying their spears, which, though not thought much of at the time, we found afterwards to have been quite an exceptional circumstance. The idea derived from to-day's experience is that they are savagely jealous of their women being given anything; in this respect, no name is too bad for them. We got a photograph of a group of natives, the Captain having to sit with them to show that nothing dreadful was going to happen; it came out pretty well.

6th.—The pinnacle went outside the reef to the furthest reef-island A, taking soundings—while I, in the whaler, went inside the reef, and met them at the island. The surf on the reef was glorious,—mountainous lines, now black, now white, subsiding with a thundering crash. When close to the island we were caught in a squall of wind and rain, and just in the middle of it, when no rifle was ready, of course a large turtle must float close by us. It always does happen thus. While I was anchored close to the shore waiting for the pinnacle, two canoes came off to me, and the men gesticulated vehemently that I should come on shore and shoot. They all got into my boat under the awning, and one of them, a good-looking fellow, was delighted with the *soft* palm of my lily-white hand, with my boots, my coat, and everything about me, over all which he purred and cooed as if I were a baby. When the pinnacle arrived we all landed, received joyfully by many natives on the shore.

Just within the woods we found a high stockade stretch-

ing along for some two or three hundred yards, about fifteen feet high, and quite open enough, I should say, for many spears out of a volley to get through. But it can be but for defence, and stretches only along the deep and landing side of the island. We all separated; two men came with me, and inside the stockade through which the path led, I met three women, who also came with me shooting. Two of them were oldish and ugly, the third was a sonsie young lassie. They were much excited, pointing out the birds, cowering away as I aimed and fired, but delighted as the birds fell. This nice girl was with me all the time, on which account she became known as "Campbell's girl." My girl, I must tell you, was slightly tattooed about her face, blue dotted lines around her eyes and cheeks, and also she, like most of them, would perhaps not have suffered by a slight scrubbing. One of us made signs to her that if she would come to the boat, we would beautify her with beads, and you should have seen the angry look of the men! Crossly they told her to be off, and then, as angrily, an older woman snarled at them, stamped her feet, pointed a finger of scorn, pshah'd and hissed like a veritable snake. Though apparently *bond fide* the property of the male sex, I fancy the inferior sex have much their own way here as elsewhere. My empty cartridge cases were accepted as valuable gifts, my girl wanting them, but always intercepted by the men, until I insisted, and made her with her own dusky fingers take them from my lily ones, after which she jumped back in a very charming and coy manner—perhaps she thought—but I—as if she were stung.

On the sea side of the island are two villages, one numbering about thirty huts, the other smaller and close by. They are excessively clean and neat, each surrounded with a fence, over which one gets by stepping-stones. The ground is floored with coral sand; cocos, sago-palms, bread-fruit, and tidy wee gardens of the yam plant grow

in and around them. One magnificent old tree covered with beautiful ferns and creepers was conspicuous close by in the woods.

The huts are large and oval in shape, with round, thickly-thatched low-eaved roofs. The low walls, also very thick, are built of large faggots of wood; the thickness of both roof and wall being a necessary protection against the heavy tropical showers which at this season, if not always, seem to fall at least once in every twenty-four hours. There are two entrances, one at each end, and besides the low roof, to avoid which one has to stoop painfully, there is an additional obstruction below of wood, some two feet high, placed across the entrance, whose doors are made of mats. The feminine population were all out to look at me, but the great secret of inducing them not to be shy is to pretend to take no notice of them. You may work the corner of your eye notwithstanding, and out of that, note the bearings of things in general; when they discover that they are not considered of absorbing interest, their shyness goes, which is pleasanter than seeing everything feminine—like rabbits in a warren—bolting into their huts.

We shot a good many small birds, among which was a fine kingfisher—these birds being common. As I was waiting on the shore, a tern flew past, which I brought down at a considerable distance, much to the loudly expressed astonishment of the natives. We noticed some uncommonly good-looking fellows here, one particularly with his hair dyed a dark lake colour. Many of the men came to the pinnacle in their canoes, but we had nothing but cloth to give them, which they care very little about; they became rather sulky, and we had some bother making them get out of the pinnacle into the only canoe left alongside, which was far too small for the number in it; and consequently sank before they reached the shore—at which we rejoiced.

We then went to island H, the only one which boasts of a hill, and we landed, hoping to shoot some birds, but the woods were far too thick and the musquitos attacked us in swarms. A prettier beach than on this island there could not be: large trees, covered with blossom, at close intervals, with great boughs growing quite low down and stretching far over the water. Walking in the shade along the strip of coral sand, covered with rare shells and corals, one had constantly to climb over these boughs or wait for a retreating wave, then run round before the next came swashing on beneath them right up to the huge trunks. It seems wonderful how these boughs can grow so heavy and out so far without levering the tree out of the ground, for on the land side they are not nearly so large. The shells are all dead unfortunately—striped nautili, and many another pretty kind; the smaller ones occupied by hermit crabs, which climb far up the roots and boughs. The only bird we got here was a fine eagle.

Then over to the point at M, where we again landed with the usual results as to birds. The most noisy bird in these woods is a "leatherhead," whose loud and many-noted whistling, the cooing of nutmeg-pigeons, and the click-click of tree-frogs are the only sounds one hears. These woods are lovely as only tropical woods can be, but they are woods, not forest. Trees there are of enormous girth here and there, but the majority of them are more remarkable for great height than thickness. The foliage above is extremely dense, and the undergrowth a tangled greenery of rare, unknown and beautiful ferns, of green bush, brown creepers, cycad- and pandanus-palms and mosses. The parasitical growth is wonderfully luxuriant. Enormous ferns, whose every leaf is only to be measured by the fathom, grow between the forks of branches, and every tree is more or less entwined with a creeper of some sort or other—one very beautiful kind, which, wreathing round some straight and branchless stem, incloses it within

a cylinder of great jutting-out green leaves. The butterflies are hardly worthy of the woods they live in, being all very dark-coloured.

7th.—Another shooting party to Pigeon Island. In the afternoon the Captain went to Island C with the idea of giving some presents of beads to the women, for they as yet appear not to have profited at all by our visit, which of course our chivalry can't brook. As usual when this policy of gratuitous presents is carried on, the men crowded round, and there was no chance for the women. So they threw strings of beads among them over the heads of the men, which made them very excited and cross—so much so that Otto and one or two others were extremely anxious that the Captain should go away at once, almost in their zeal pushing him towards his boat. Of course Otto is a great friend, he having received, as most of the nicest men, as much trade-gear as he wants. This savageness on the part of the mob is pure selfishness, not jealousy in the sense of their not wishing us to have anything to say to their women; that feeling was totally absent after the first day. Indeed the wind veered quite round the other way on this island. A snake was shot up a tree on Pigeon Island.

8th.—Again to Island A with artist and others wishing to see it. W. sketched the village, surrounded by all the dusky beauties of the island. I examined the village much more thoroughly to-day, and went into several huts, the women willingly nodding permission. The huts are very dark inside, with broad rough seats all round the walls. In some there is an oval arrangement of posts supporting the roof, and a platform at a height of five feet or so. Others have only one central post. On this platform, and hanging to the sides of the arched roof, are their penates,—spears, lime gourds, twine haversacks, and great wooden bowls out of which they eat their food. From what we can make out, the natives keep entirely to their respective

islands, and do not care about going to any one not their own, where perhaps they mutually consider each other as interlopers. In all the villages there are what appear to be public huts, where fishing-nets and spears are kept, also the large assembling, or dancing—or for whatever purpose it may be used—drum. This is made from the trunk of a good-sized tree, the inside hollowed out, and a narrow slit running along the outside. It is about seven feet long by two broad. Made in the same way, they have much smaller ones. Their nets are admirably made of stuff looking like good twine, so clever are they at working up fibre. These nets are fastened to stakes—always black with “noddies”—on the lee side of the islands.

My girl lives in the smaller adjoining village. We met and saluted each other, and she begged hard for my pocket-handkerchief, which I refused to give—so you see I cannot be very “far gone” after all. But one always fears that some lover or husband may be struck jealous, and stick you with a spear unexpectedly.

They showed us here how they make fire by rubbing two sticks, a small pointed piece rubbed hard in the groove of another. Everybody, men, women, and children, were quite at their ease and most amiable. There were several pleasant-looking girls, one with a bigger mop of hair than usual, and dyed the dark lake colour. Some of these girls were much lighter coloured than others, a difference one sees, more rarely, among the men too. Waiting by myself on the shore for the rest to come down, I was minutely examined by some women, in which I lent them my very best aid. They stooped and felt my boots, so I put my foot up on a canoe. From the boots they turned their attention to my socks, which they pulled down, and were much puzzled and delighted with my white skin. I firmly believe they thought our hands and faces painted; my arms too they thought much too nice. In short they admired me immensely, and I felt much flattered.

The Captain had brought a bagful of trade-gear, as we wanted to give them something in remembrance of the last time we were here, as well as to-day. Envy, malice, and all uncharitableness again the result, though happily they vent it all among and on themselves. The straw that broke the camel's back was a large adze, the only one, being given to the man who showed us fire-rubbing, and who seemed to be a "boss;" but then another man who was perhaps a greater "boss" (how are we to know?) was offered an ordinary axe, but he refused it disdainfully and crossly. In the middle of it all we shoved off, leaving them all apparently grossly ungrateful to us, and jealous of each other. This is always the way: give them nothing and they could not be more civil and pleasant; open a bag of trade-gear, and the demon of jealousy makes them savages at once.

Two men had brought down spears probably for barter, and we asked them to throw them, which request some of us thought an extremely rash one to make in their quarrelsome state of mind. They made strong but not very accurate shooting at a mark about twenty yards off. The spears flew with that quivering motion which these spear-throwers always give them.

I did not tell you that a native at Humboldt Bay fired an arrow for us to see, high into the air, and for a long distance. It flew straight, but dropped on the water, I think, flat. Their extreme length I suppose makes it unnecessary to feather them.

We again noticed how comparatively very good-looking three or four of the grown-up young fellows were on this island. We then steamed over to bay X to see what depth of water it had. We found it to be quite shallow, with a bar almost right across. But we managed to get some way inside by coasting close to the mangrove which fringes the greater part of the shore. We made for a dark-looking place, which on the west coast of Africa

would be sure sign of a river. When opposite, we saw there was an opening in the mangrove wall, and in the dingey went to examine. It was a narrow creek, N branching off in several directions inland, but too shallow—the tide being out—for us to go further than 300 yards or so up. In the centre of a clear space where the creek split into two, a fine tree grew straight up out of the water. Beautiful butterflies, with large blue patches on an otherwise black wing, were flitting rapidly among the mangrove blossom; we tried to shoot them with dust shot, but though we winged one it got safely away. The heat within these solid green walls was intense, no breath of air, and perfect stillness. But a mangrove creek such as this is rarely seen, and I never saw anywhere before such thick-growing mangrove.

As we got back to the pinnace a canoe stole quietly out from the same creek, attracted probably by the sound of our guns. We thought at first these men must be living somewhere up the creek, but afterwards recognised them as Island C natives, for, from so often seeing them alongside or on their islands, we are beginning to know their faces very well.

I forgot to tell you that at Zamboanga we got some goats and pigs, wherewith to stock Greenwich Island. As now we are not going there, we thought we would get rid of the goats by giving them to the natives here. To-day we took them to Island A and landed them. But the natives would not have them at any price, being evidently frightened of them, and as they did not understand what they were, or their *raison d'être* generally, this was only natural. As they were all young we could not show them how to turn their milking capacities to advantage; and as the natives had not the faintest notion of their present or ultimate use, no wonder they did not want them. Goats, like white people, they know nothing about, that is certain. So we landed the goats on Island B, which is uninhabited

and left them to their fate. Afterwards we saw a canoe paddle over from A to B Island, with what intention we could not tell, but I am afraid these goats will be sacrificed to savage ignorance.

Our pigs we did not offer them, as they have their own, and of a good short-snouted breed. A pity we had no fowls, which are not quite so universal as I imagined; they have none here. In this bay we saw betel-palms on the mainland, and to get their nuts the natives probably come here. Half-a-dozen times we ran aground, but fortunately the little pinnace has a great knack of getting uninjured off again. We again landed at M, where there is no mangrove, and the botanist got what he could. Off New Guinea, floating amongst the masses of driftwood, were quantities of a large yellow-red fruit, the size of a small orange. These we find common here, growing on a small tree; the fruit has much the look of an orange, but is not edible.

9th.—In the forenoon two of us went in the pinnace to Island F, as we think it is here the natives point when asked about the teeth they wear as ornaments. The woods were quite get-throughable, though the exasperating creepers caught us now and then; but the foliage up above was as thick as ever, making small-bird-shooting quite a chance. The cycad-palms were in great profusion and beauty on this island. One good-sized bird flew past me—blue and brown plumage—and was gone before my presence of mind returned.

Two passing canoes, seeing the pinnace, came and landed, and from the men we got an explanation of the ground being pitted with holes. Any number of large land-crabs they hauled out of them. We got one man to come through the woods with us who seemed to understand what we wanted, he imitating the motions of some animal climbing a tree. Whenever we came to one more thickly smothered with creepers than usual, he looked up intently

and shook the rope-like strands which dropped on to the ground from high overhead. But we saw nothing. The animal is probably some kind of cus-cus. These men had been fishing, and a tub full of most delectable little fish was bought for some trifle by the bluejackets in the pinnace. Going back we shot a frigate-bird, which among a crowd of black noddies was fishing among a shoal of "cavalli" and small fry. The harbour seems full of fish, but the lines from the ship were quite unsuccessful. The natives appear to catch plenty on the reefs.

In the afternoon the Captain went in the pinnace to look for a bay, marked as a large one on the chart, about eight miles to the eastward, which we, however, think does not exist. The surf all along the shore is very heavy, breaking on the land or on some fringing reef. When abreast of the bay we saw a line of heavy breakers apparently stretching right across the mouth. But watching a while we saw a "smoothe," and in there we steamed. These "blind rollers" are very dangerous. For several minutes nothing is seen to indicate shallow water, when suddenly a great heap of water rears up—just alongside of the boat perhaps—and then, without breaking there, goes rolling on in a way that makes you very glad you are not on the top of it, and eventually smashes on to a reef or on the shore. Two canoes met us inside, the men eager for us to land and shoot birds, coo-oo-ing and pointing to the woods. The bay is small and full of reefs and breakers.

We landed on the western point, and then with the natives, some of whom attach themselves to each person, and all understand our bird-shooting proclivities, pointing out birds, carrying ammunition, &c., we walked along the shore round the bay. Two pleasant fellows came with us. On the other side of the bay we came, to our great surprise, upon a river, about forty yards wide as far as we can see it, which is not far, as it soon curves round a hill. It

looked very deep, but with a shallow bar and small breakers across the entrance. We wished to cross or wade up, but the natives were horrified, making motions about some great beast coming out and eating us. On the sand we traced the outlines of a crocodile—a mighty rough one certainly!—but their assenting exclamations and grunts showed us we were right; undoubtedly the river is full of these brutes. Even skirting the edge of the river for some yards, now and then ankle-deep in water, made the men quite nervous, and they were not happy till we struck into the woods, through which they led us in a circle back to where we had started from.

In this wood of thick high shrubs and ferns, mingled with small trees, we found betel-palms. From one hung a great cluster of nuts. Tearing up a creeper, twisting it into what sailors call a "grummet," and placing it under his soles and over his insteps, at each lift pressing this firmly against the stem, our friend was at the top in a trice, tore down the bunch, and commenced chewing. They made signs that they would take us up the river in a canoe, and pointed as if one could go a long way up. Most unlucky that we did not discover it before; it would have been a grand way of getting into the interior of the country, which, as it is, we have only scratched. It seems to run at the foot of the highest land we can see from the anchorage, a long ridge of wood-clad hill with three small "nipples" at the highest part, looking like small craters, and from where perhaps they obtain the obsidian. On the skyline of this ridge we can plainly see with the naked eye—for it is close enough for that—coco-palms. The Captain had walked in the other direction, skirting two shallow bays, and then he came to a village which was being built, with young cocos and bananas planted around. A little further up the hill he thought there was another village, but he had no time to investigate, but thereabouts is a small clump of cocos on a small hill-top. This settles a

question we were in doubt about, as to whether any part of the mainland within sight of us was inhabited.

There is another island, K, to the eastward, about ten miles from the ship, which we know is inhabited, as canoes come and go from there, visiting us every day, and the inhabitants are very anxious that we should visit them. But the mainland to the southward and westward of us is certainly not inhabited near the coast. Indeed it would be far too swampy for huts built, as theirs are, on the ground, and not raised above it, or the water, on piles.

Several natives accompanied the Captain back from the village, so with the crews of the canoes there were a good many assembled. We gave the men who came with us red handkerchiefs, and there was a pleasant absence of squabbling amongst them. We towed a canoe to the ship, which the natives enjoy immensely. The beach of this bay was composed of volcanic, not coral, sand, and sprinkled with delicate pink shells. We shot a few small birds, a curlew and sandpiper. After dark we fired war- and signal-rockets and Armstrong guns by way of showing the natives that we had some strange teeth in our jaws. We heard them beating drums and shouting; doubtless they were much astonished. I am only sorry we did not stop till dark and give our friends at Humboldt Bay the same kind of entertainment; one gentleman there was in an ace of being astonished, for as we steamed off he stood up, aimed, and looked as if he meant to give us a farewell shot; if he had done so a loaded rifle was all ready, and very much at his disposal!

10th.—The canoes came off very late this morning, which made us think we had frightened them too much, but afterwards several came alongside as usual. In the morning we went to pay a farewell visit to Island C, which I had not explored before, my work in the pinnace usually taking me elsewhere. In the village at which we landed is a "temple," at least it looks like it. It is a good deal

larger than the common huts; and on each side of the door are two rudely and obscenely-carved figures of a man and woman painted black, red, and white. In the centre is a thick post, striped white and red, and hung around with human, turtles', pigs', and cus-cus' skulls, also with skeletons of fish and turtle. When we first arrived they did not wish us to go in, but afterwards did not object, and W. got a drawing of the figures. The first day we visited it, during a heavy shower, they pointed to the sky and then to the figures as if it were they who were causing the tropical downpour. But to-day the entrance is closed with mats, and the figures, too, are covered with matting. We thought they made signs as if there was a dead body inside. The men struck me as being sulky and apathetic at this village, "Otto" among them, and the women kept to their huts.

We then walked along the shore to the next village, which is smaller, and where they were all much jollier. We went into a public hut—always marked with white-and-red-striped central and door posts, but the other village is the only one where we saw carved figures. We tried to discover what they do with their dead, pointing to the skeletons of fish and animals hanging up, and then imitating the process of eating, all which was assented to. Then we pointed to ourselves, and then to them, leaning our heads on our hands as meaning death, and then? and then—as far as we could make out—the legs and arms are eaten, all put into the great bowls! But surely they don't eat their dead! but what do they do with them? There are no signs of graves; and though we managed to get eight, I think, human skulls, that was all they were able to rummage up. They willingly gave the skulls for axes; these may have been their enemies' skulls.

The women and girls were all out, and we gave them beads; no man objecting or looking the least as if he did not like it. Very jolly they all were, laughing and giggling

when the younger girls commenced a heel-and-toe dance, which we made signs was the price of beads. I noticed one strapping girl, whose dress more particularly than most showed that "the style is here the Grecian Bend." Then across the island, through lovely woods, to the other village, where also everybody was hearty and pleasant-mannered: no hanging back on the part of the women and children. My eyeglass is a great success, a most valuable, attractive, and subjective weapon, I can tell you! They look through it and try to stick it in their eyes.

The children are usually very good-looking, some quite pretty, with clear brown skins, good eyes, and merry laughing mouths. We saw a very Fijian-looking girl, and we went into her hut with her husband; I could have wished her face was not blacked in a few places, but so it was, for all which she was a bonnie young savagess. But the best-looking one here I should only class with a third-rate belle in either Tonga or Kandavu. They seem to age very quickly, although apparently having no hard or servile work to perform; they are plump and fat, as are also the children, and they one and all look as happy as possible. But one most dreadful old dame I did see at Island A, who was the nearest approach to a living skeleton one could well imagine—her surely they would not eat! I saw a human skull on the ground with a large hole knocked in it, and the thought flashed through me that through that hole they had perhaps extracted the brain for eating purposes.

Men and women were wearing the beads procured from us, one favoured wife with a long and thickly strung necklace of blue beads, and the men wearing broad bracelets and armlets, while the lobes of their ears, which, pierced with a large hole, hang down—a ring of flesh of an inch or more—were worked round with beads also.

Two days ago a well-made model of a canoe was brought to the ship and instantly bought, which brought out all

the remaining ones in the islands, and now the supply being exhausted, and, as they suppose, the demand not, nearly every man to-day is busy with models of canoes, cutting them out with much satisfaction, using our knives and axes; but as we go away this afternoon their labour will not be for us. The boys brought us lizards dangling from bits of string, and in return were given beads. I made a remarkably successful shot at a native word. I wanted to know their word for canoe: "pirogue" came to my tongue: "parog(u)a" at once they said, and pointed to the canoes. "Parogua," I repeated, and yes! that is what they call them.

The villages on this island are not fence-surrounded. It seems odd that on Island A there should be stockades and fences, and on this one nothing of the kind. The men as usual are delighted to come shooting with us, rushing to pick the birds up as they fall, but on no account will they be prevailed to try a shot themselves. Their manner impressed me most favourably to-day; no signs of doubt or suspicion, no crowding round one, or obtrusiveness generally. The boys came laughingly holding out their hands for beads, or dived into the shrubbery for lizards as an inducement to us. A red trade-handkerchief sticking out of my pocket excited their cupidity, one old woman offering me a papau-apple, and a man some trumpery lime gourd, at the idea of which unequal exchange I burst out laughing, which he most good-humouredly echoed. I always make it a rule to *give* nothing, unless quite out of sight of the others, making them give me something in exchange, whether I want it or not, thus preventing jealousy.

Their food consists of sago, coco-nuts, plantains, yams, roast pig, papau-apples, fish, betel-nuts, and lime; this last they are perpetually eating; their interiors one would think must be lined with it. By food I mean only what we have seen them eating; what else in human or other

shapes they may indulge in, we do not know. The plantains they appear to cultivate on the mainland, for we saw none on the islands; they are, like the bananas at Humboldt Bay, extremely coarse and harsh-flavoured. The yams they grow in little inclosed beds adjoining the huts, where also they first plant the young cocos; but most of the yams they brought to us came from the far-away Island K.

The bowls out of which they eat their food are of all sizes, from quite small to great things three feet in diameter. They have two well-carved handles, the patterns on them and on the sides of the bowl showing that these savages have a decidedly artistic turn of mind. One of these bowls I saw was in the form of a large lizard, a narrow oval body forming the bowl, the tail and head the handles; a lizard too is often carved on the handles, a common design in more civilized countries.

One afternoon the Captain and Professor from their cabin-ports bought several of these bowls, chiefly from one canoe. Having got them they found, as many of us did, that they did not know what to do with them, and so chucked them out of the port again. There was a rush for them made by the surrounding canoes, who thus cheaply got bowls for which they had given nothing in exchange. Of course the indignation of their former owner was intense, though as he had sold them, he could not claim them. He snatched up a spear with quite the look as if he meant to throw it into the port, but was restrained and held back by other men in the canoe, who laughingly made signs that they would restrain this idiot. The whole affair seemed to amuse them very much. If the man had thrown his spear, he would have had a bullet in him as sure as he stood there.

During the "dinner-hour," several of the natives we met yesterday on the mainland came on board. For ethnological reasons we measured them in every way and got a

good photograph of one. Since the first day but very few have been on board, though I hear that the blue-jackets had some down below in their messes, when they ate nearly all the men's dinner. The first man who came cannily down the ladder, we made sit on a chair—we were smoking at the time—and as the strangeness of all the surrounding objects struck his eye, he kept on gently slapping his thigh, between each slap putting his bent forefinger between his teeth. A highly imbecile appearance altogether. It was most ridiculous to watch him, as he slowly turned round on his chair, pointing at everything in succession, and between each point the teeth and thigh performance. He was followed by some more of our yesterday's friends, who were very much at their ease with us. One man who had a pleasant though ugly face sat himself beside me on a table, with his hand placed familiarly on my knee. From him we again tried to solve the "dead question." We simulated death, then, munching vigorously, pointed to our legs and arms. Oh, yes! no doubt of it; he seemed quite to comprehend, touching his arms and legs and working his jaws. We were all laughing, he as much as anybody, when some one pointed to me and asked him if he would eat *my* legs; he was delighted, and undoubtedly it seemed to us would joyfully eat those my beautiful members. We all could not but agree that this looked like confirmation of the suspicion we had arrived at in the village. But surely they *cannot* eat their dead!

These reef-islands are quite small, and are lovely coral isles with delicious woods set in fringes of dazzling white sand. On the sea-side, a few hundred yards from the shore, the surf in great walls, now blue, now white, is ever thundering along the outer edge of the reef, while inside it is quite still, and the water so shallow and clear that every coral, weed, shell, and starfish is plainly seen. On this reef the canoes are poled along instead of paddled. We saw several wells, neatly fenced round, and covered

with pieces of board on which are always laid some great white shells, while a drinking-cup, made of a coco-nut, is hung on the fence close by.

When I got back to the first village I peeped into a hut, and the yells that arose from four small girls, who darted out of the opposite door, were the most painful blow to my *amour propre* that I have yet experienced from these people. Some terrible wild beast could not have caused more consternation. I discreetly retired—into my boots. Certainly much the least nice village, this, of all of them. If I had to choose a residence among these islands, I should go to Island A; for though at the other villages on this Island C I was much struck with their pleasant behaviour, still there is a lack of that confident familiarity which is so pleasingly present at island A. No girls think of coming with us on our rambles at Island C, whereas on the other, as I have told you, my gillie savagesses admiringly dogged my steps.

Though one would think that the trading vessel, whatever it was, that appears to have been here most probably came from the eastward and Australia, yet from the wonder they showed at our white skins, we think it may have been some small Malay craft from Tidore or Ceram. One morning an officer appeared at his open port, having just emerged from his bath, this strange apparition being greeted by a shout of delight and astonishment from the canoes alongside, and several times the natives have asked me to unbutton my shirt to see my white chest, and quite puzzled they look at it always; this does not seem as if they had seen white men before, does it? The small iron adzes, and their idea that turtle and pearl-shell were our chief objects,—these are the only signs of trade we saw. As a rule, when they came on board they showed no particular astonishment; indeed one man the first morning went down below and walked about as if there was nothing strange or novel in the sight at all.

They have considerable quantities of tortoise-shell, but most of it looks rather poor and thin stuff, though the Japanese gave us good prices for it: pearl-shells they seem not to have so much of. At first hoop-iron was the greatest attraction to them, but when our supply was nearly exhausted, and knives and axes were given them, then hoop-iron was proportionately despised. We saw them when on shore grinding an edge on to the hoop-iron with a stone. An officer, the first morning, offering to a native a piece of hoop-iron for something he pointed out, the man held up two fingers, indicating two pieces of iron. He retired¹ for an instant, broke the one piece into two, returned and got the wished-for article for the *two* pieces of iron. This immoral transaction was a joking exception, *not* the rule. Newspapers and foolscap they willingly exchanged for pieces of tortoise-shell the first day, but a heavy shower that same evening must have undeceived them as to the texture of paper I fancy.

Their faces when painted, which is seldom, are rubbed over with a shiny black stuff, looking as if black-leaded, which perhaps they were. A few women had their faces painted this way too.¹ Red paint which we gave them was at once applied to their faces in circles round the eyes; green paint or any other colour they also beautified themselves with. Their own red ochre is made probably with clay and oil, which they smear sometimes over their bodies. On one man's body thus smeared we painted in large black-letters, "*H.M.S. Challenger*," which made him think himself a very great swell. I only saw one man's face coloured with their own made red-ochre; he had two curves extending from the inside corner of the eyes down to the jaws, and, strangely enough, the effect was rather good. But the hideous black painted, barred-with-

¹ Probably a sign of mourning—as it is on parts of the New Guinea coast.

red, faces of the Humboldt Bay savages we never saw here.

The septum of the nose is pierced, but only with a small hole, and so does not quite disfigure that organ; through it they put a large thin shell-ring or piece of bone. But their chief pride is another kind of noselet. Close up to the nose is a half circle of teeth, curving outward; from this a long sharp-pointed bit of white bone hangs from the end of two bits of string, strung with beads made of small shells. This ornament swings and dangles about below the chin, and is the *chef d'œuvre* of their personal jewellery. The boar tusk fashion they have not, and we have seen no signs that they hunt wild boar. Their bracelets and armlets are made of shell, great rings scratched with patterns, and worn in numbers.

These natives are slightly and well made, with straight hips; and they are perfectly free of the skin-disease, so common at the Arru and Ké islands and at Humboldt Bay, which is a curious fact. Like the Humboldt Bay natives, they did not care at all for tobacco, though there they took it when offered as a present. Here they won't even do that, though this man whose astonished gestures amused us so much, took a cigar, and began to puff away vigorously, but instead of drawing the smoke in—inhaling—he kept on blowing outwards, until we showed him the way, when he was childishly pleased and puffed away like a steam-engine.

They have two styles of head-dress: a broad banana leaf—white and dried—tied at the back of the head, one end on top of the chignon, the other end below it, forming a great loop sticking up, and behind the head. Our red trade-handkerchiefs are much used for this, put over the leaf, which being stiff, supports them. The foolscap and newspapers were made into these head-dresses. The other, and not so picturesque a style, is wrapping their mops round with native cloth, always stained a dull red, which

sticks up behind like a horn, sometimes split into two horns.

There is such a variety of feature and expression among them that it is hard to fix upon one common type. A Jewish cast of countenance with aquiline nose is common, while one man was as like a West African negro as possible. Like the women, they soon lose their good looks, though often retaining a pleasant expression. Many of the boys and young fellows were decidedly better looking than any of the women. In such a short time as we were there, the conversation being all pantomimic, it was impossible to discover much of their manners and customs; each of us, moreover, having our own opinion of what they do or do not mean. Whether they practise polygamy, what they do with their dead, whether they fight much among themselves or inter-tribally, our answers, if we have any, can only be guessed at. As we were never in their villages after dark, we do not know how many live in one hut, but the number must be large.

The absence of old men was very noticeable; two oldish fellows with yellow-grey hair I saw, but none really old or helpless. What authority their chiefs—if they were chiefs, Otto, for instance—have, we did not at all clearly make out. Otto one morning came off with a canoe full of men—it was after the landing of the Captain the first morning—and excitedly harangued the crowd of canoes round us. They all paid attention, left off trading to listen, and seemed impressed with whatever was being said. On the mainland at Bay *y* they pointed us out an oldish man, whom they called *Lābān*, and that was the same, too, they called us when wishing to attract our attention, though their more usual mode was by loud grunts "*Ungh*."

The man who so gladly would have eaten my legs had a wound on his back, made, as he showed us, by an obsidian knife. Some of them have their chests and shoulders

marked with small intentionally made cicatrices, but nothing to the extent to which the Australians and other savages we have met practise this same custom. They wear a curious ornament hung from the neck behind—two human bones—the humerus of the arm—incased in a sheath of long feathers; only very few wore this, Otto for one, and it was perhaps the sign of a chief and of his family, or sign of mourning—wearing the bones of the deceased. On the breast they wear a flat, circular disk, cut from the central part of the large pearl-shell; on this is stuck a thin slice of tortoise-shell, cut often into extremely pretty patterns. This same ornament they wear also on their heads above the forehead, or else an uncut pearl-shell. There are no signs of cassowary's feathers or bones, so the wig fashion is not known. (At Humboldt Bay we saw one bald old fellow who wore a cassowary wig which covered his whole pate.)

Round the waist, high up, they wear a broad belt of finely plaited yellow and black straw; fillets of the same are round their arms. These belts and armlets appear to be worked on in many cases when they are young, in such a way that they cannot be taken off. One boy trying to get his waistbelt off by slipping it down over his hips could not manage it at all; he twisted and wriggled in desperation—a knife being at stake—but did not succeed. The bags they carry about with them and in which they keep their lime-gourds, betel-nuts, and the leaves they eat with them, and other small trinkets, are extremely well and closely worked with twine made of fibre. This twine might, as far as appearance goes, come from that all-hailing city Birmingham.

They have large fish-hooks—unbarbed—made of shell; as you know, these fish-hooks require no bait, being in themselves worm-like, jelly-like, as if cut out from blancmange. That is, until you swallow them, when you discover the point sharp, and the texture generally extremely hard.

We saw some heavy stone axes or tomahawks, but these implements do not seem to be much in use here, for the natives appear to prefer shell to stone; the latter is probably used only for heavy work. One tree we found cut down almost as if done with a saw.

The whole result of our small-bird¹ shooting was very poor. The inhabited islands were the best, and in fact the only places where one could get at them at all; there we shot green lorriquets, pigeons, kingfishers, lovely little fruit-doves, and some small dull-coloured fry. These lorriquets are almost the same at Cape York, Arru, Humboldt Bay, and here, and it is only when lying side by side that one can see the slight but evident difference between them. A small species of "glossy starling" is common, with glossy blue-green plumage and bright red eyes. These birds fly about in flocks.

Doubtful calculations are being made as to the population of the villages we have seen; they give to each island from 300 to 400 souls. On the whole this portion of Admiralty Island seems very sparsely populated.

I wonder why the natives here are so strangely confident and civil in their demeanour?² That magic word *trade* is at the bottom of it, and fear of our big ship perhaps at the top; but between the two I think they must have a layer of the milk of human kindness, which their connections further to the westward have not been blessed with. But perhaps it is the white man who, with his kidnapping and other civilized manners, has sapped away that layer from them. But just to show you how opinions differ as regards these natives, I must tell you that some of us are quite certain that if Otto had us in his power, and no big ship near, he would kill and eat us, whereas I and some others will always declare that pleasanter savages in heart and

¹ Many of the birds shot here are new species.

² They may have heard of the *Alacrity's* visit to the southern coast a few months previous.

manners one never could come across. Some people, I do believe, if they came across a race of angels unawares, would swear that in their hearts these angels meant mischief, and that they would be mighty sorry to trust themselves alone with them!

I think we were all glad to leave Admiralty Island. Doing no more than we did, pottering about among villages and able only to go half a mile—and that with difficulty—inland we had enough of it. But I would have given much to have tried the river and gone a little way into the interior.

Coming out of what we have called "Nares Harbour" we as nearly got aground as ever I wish to be. The water suddenly shoaled, and we just missed by a hairsbreadth. There was a heavy swell on, and it would have been no joke if we had run aground. We meant to go to "Guam," the southernmost of the Ladrone Islands, but unfavourable winds caused us to pass 300 miles to the westward of it.

The only island that we did come across in our track, although we passed over a sea dotted thickly with them, we sailed *over* one fine morning, and found 2,400 fms. on it, as marked on the chart. This was Lindsay Island, which *does* exist somewhere.

We got an interesting sounding in lat. $11^{\circ} 24'$ N. long. $143^{\circ} 16'$ E., 4,475 fms., the deepest by far that we have ever yet found. 3,875 fms. to the north of St. Thomas's was the next deepest we got. The Americans have been rivaling us by very deep soundings off the coast of Japan; they report 4,650 fms., but this sounding brought up no mud; we did—a red-brown mud with a thin top layer of small pumice and manganese—ergo, our sounding was valid, the Americans' not. We had to sound twice to make sure, as the weights were not sufficient in the first case. Two of the thermometers were smashed, though the third was not, very strangely; it registered 35.2° not

corrected for pressure, which correction beyond 3,000 fms. we do not know; they not having been tested above a pressure of three tons.

The cruise from Admiralty Island to Yokohama was very wearisome, and nothing occurred which would interest you to hear. We have been catching sharks, and one "boat-swain bird" was caught aloft—a rare event—whose tail had a faint pink blush: we have also shot albatross, of a small dark species; and of course the trawling goes on, though with very barren results, often nothing coming up, except bits of pumice mixed with manganese.

We left Admiralty Island on March 10th, and arrived at Yokohama on April 11th.

It appears that H.M.S. *Basilisk* looked in at Humboldt Bay in May, '74. Captain Moresby says nothing about having attempted to land, but as with us, the *Basilisk* was "surrounded by scores of canoes full of wild vociferating savages, armed with formidable bows and arrows, here first seen by us in East New Guinea. They showed no signs of fear nor reverence, and knowing their reputation for making sudden attacks, we kept our rifles ready."

It has been found that in East New Guinea the natives "bury their dead in the houses in which they have lived, and disinter the remains at the end of six months, when they hang the skull up, destitute of the lower jaw, which is kept as an ornament." It is probable that the same custom of disposing of their dead obtains in Admiralty Island. I have told you that in Admiralty Island they knew how to make fire by the friction of two pieces of wood; it is said that on the coast of New Guinea immediately to the southward, the natives have no knowledge of how thus to make fire, and therefore have always to carry a live coal about with them.

A few months previous to our visit to the N.W. end of Admiralty Island, H.M.S. *Alacrity* cruised along the

southern and eastern coast of this oblong-shaped island, as well as the off-lying islands in its neighbourhood. I can find no details of general interest in the official notice of this visit, excepting one—that a village was observed, on the mainland, which was built on stakes over the sea.

I have so often mentioned the "Frigate-" and "Tropic-" birds, that I am tempted to extract some notes about them from Dr. Bennett's "Gatherings of a Naturalist." The Frigate-bird resembles the Cormorant in its general appearance, and is also known as the Sea Hawk, or Man-of-War Bird. Owing to the enormous comparative size of the pectoral muscles, these birds are capable of sustaining very long flights. Their immense power of wing is evidenced by the great distances they are seen from land, for from the formation of their feet they are incapable of alighting and resting on the water. They have the power of soaring to so great an elevation in the air as to appear mere specks in the sky, their wings, as they rise very slowly, being spread to their utmost degree and kept motionless, while the long forked tail is seen expanding and closing with a quick alternate action—as though materially assisting the upward flight of the bird. From these great altitudes they may be seen sliding downwards in gentle undulations, varied by the most rapid action if darting on their prey. Being incapable of swimming and diving, they keep on the alert for Flying-fish when these are started into the air by Albicores or Bonitos. (It is extremely rare to see them thus catching Flying-fish in the open sea, but common enough in the neighbourhood of land.) When unsuccessful in this, they resort to plundering Gannets and Terns, which are stopped in mid-air as they wing their way homewards, and compelled to disgorge their prey, which is caught by the Frigate-bird before it reaches the water. Should the victim refuse to disgorge peacefully, the pirate bird first hovers over his victim, and then darting rapidly down, strikes it upon the back of the head. The male bird is visibly distinct from the female in having a red pouch under the throat. The use of this pouch is doubtful; it is capable, however, of being filled at will with air, when it would afford an additional facility to flight; but this cannot be its sole use, for in that case the female would have it too, and it is she who particularly wants it, for having laid her solitary white egg on the bare rock or sand, or in a tree, she flies away searching for food, while her husband dutifully sits on the egg at home. This fact is well ascertained; as is the other—that when the male bird is on the ground its pouch is flaccid, but inflated with air when the bird is rising, and on the wing. The Polynesian islanders value the long black feathers of their tails as head-dresses for their chiefs, and climb the cliffs for the purpose of procuring them.

The Tropic-birds (or Boatwain-birds) are the *Phaëtons*, the "Birds of the Sun," so-called on account of their soaring to great elevations under a tropical sun, and from the circumstance that they seldom or never quit the warm regions of the tropics, where they are seen during calm weather, distinguished by their peculiar jerking flight, hovering in mid-air watching for prey, or, when stronger reasons prevail, skimming gently over the surface of the ocean. They are amongst the most beautiful of all oceanic birds, as—a bright sun shining on their chaste and delicate satiny plumage

—they soar to a great elevation, with slow moving wings, accompanied by a jerky motion, rising and falling in the air, uttering meanwhile their peculiar shrill notes, resembling fancifully a "boatswain's" whistle. There are two species of these birds—"white" and "roseate." Besides the general roseate plumage of the last named, their long tail-feathers are coloured bright red, which may be plucked from the birds as they sit tamely on their nests—built on the ground, under bushes or shelving ledges of rock. The Pacific islanders have long used these as ornaments, and Captain Cook mentions the Friendly islanders as wearing "red caps"—made from these tail-feathers. Both sexes of the Tropic-birds assist in the task of incubation; and though sometimes two eggs may be laid, yet it is seldom that more than one bird is reared. Like the Frigate-birds, with whom they are frequently seen in company, they are seen many hundreds of miles away from land, and at great heights in the air, though in this respect they are far surpassed by the Frigate-bird.

The official account of our (what I may call) repulse at Humboldt I is as follows: "Finding we were being gradually set towards the coast of New Guinea, I resolved to call in at Humboldt Bay, and if possible let Staff-Commander Tizard survey it, and also give Professor Thomson and his staff an opportunity of making some researches. We anchored inside Caillie Point on the evening of the 23rd, and shifted further into the bay the following morning, anchoring in 35 fms. Boats were hoisted out and armed, to begin work, but the menacing attitude of the natives on two occasions determined me to leave the same evening. A stay of a week or ten days would, perhaps, have brought about a good understanding, but with such uncertainty, time, I feared, could not be spared; nor did I consider that the service on which we were engaged would justify an embroilment, and perhaps bloodshed. There were about 100 canoes alongside during the whole day, with from 3 to 6 natives in each, but not one of them could be induced to put a foot on board, and although trade was carried on the whole time and in the fairest spirit on both sides, for bows and arrows and other native productions, nevertheless, up went their bows on the most groundless alarm, even on the back turn of the screw."

CHAPTER VI.

A PEEP INTO JAPAN.

I MUST write you something about a cruise I had in the interior of Japan. I do so rather reluctantly, for no description of mine can give you any real idea of this charming country and as charming people. However, let us be off.

This is the way we travel in Japan. With us we take our wine—sherry, madeira, and brandy; our food, consisting of tins of bacon, butter, coffee, milk, salmon, sardines, jams, and potted meats; with us we take an Interpreter, a good-looking, well-mannered young Japanese, speaking English fairly, and except for the feeling with which he constantly inspired us that both morally and physically he wanted kicking—so slow and provokingly deliberate was he in his movements,—we got on well together. You know that Japan is not yet “open” to foreigners; only in the “treaty ports,” in defined boundaries around them, and in “concessions” in the towns of Yedo and Osaka can foreigners come, go, or stay as they list. We, and everybody travelling outside these limits, have to get passports, which are portentous-looking documents, and procured through the Legations. The reason “why” you wish to travel must be stated in your demand for a passport; the consular doctor’s certificate that it will do your health good is, however, a sufficient reason for a liberal Japanese government. But we soar higher, we belong to a scientific ship, we must keep up our character, we travel on scientific purposes intent; I to study the botany (ye outraged

floral deities!) and M. the geology of the country, and thus we procure our passes to Nikkô-Kekkô—Nikkô, the Beautiful.

How to travel, whether driving in European fashion, or on horseback, or by *jinrickisha*, which is driving in Japanese fashion, was finally settled in favour of the last. These jinrickishas are, comparatively speaking, a great institution in Japan. They are something in the style of very large two-wheeled perambulators, on high wheels, with two shafts in front, inside which is a man, not harnessed in any way, but pulling simply by holding a shaft in each hand. Introduced into the country some eight years ago, and adopted by the government, which gave a premium on every one made in the country—thus cutting out Yankee speculation—they now swarm over the country, being counted by many thousands in Yedo alone. The disbanded soldiery of the many princes, who during recent reforms gave up their individual troops in favour of the Emperor's national army, have been largely compelled to take to this, for them, terribly *infra dig.* occupation to earn their living. Excepting in the hilly country, and on bad roads, these jinrickishas have completely superseded the old mode of travelling in Japan, *i.e.*, being carried in *cangos* or *norimons*. There is a tradition that centuries ago jinrickishas, or wheeled conveyances resembling them, were in vogue, but since then the only man who travelled on wheels was the Mikado—securely hidden in a great waggon, covered with gold and lacquer, and dragged by oxen.

One hour by the railway, admirably managed by the Japanese, takes us from Yokohama to Yedo, where we sleep that night at the Engineering College, where M. has friends professorial. There are three colleges in Yedo, all in charge of Englishmen, and an American or two. Of these other colleges, one is naval, and the other used at one time to go by the name of the place for studying Barbarian books; later still for the study of the Western sciences, and now by some equally progressive title.

We started from Yedo on a lovely May morning with four "jinrickies"—one containing our food and luggage—and rattled through the great town at a brisk trot, changing for the first time in the outskirts, and so changing at more or less regular distances we continued throughout the day. Along the roads we find government offices at certain distances in villages, where we change our jinrickisha and coolie. The charge is seven cents per Japanese *Ri* (two-and-a-half miles about), cheap enough surely! If we like we can hire jinrickishas privately, taking one, or two, or more men; in the last case the men pull tandem fashion. This is slower and more expensive travelling, so we have patronized the government postal system. Changing at every six or eight miles, we pass over a perfectly flat country, cultivated to perfection with wheat, barley, rice, and a tall yellow-flowered plant from which is made a kind of oil. Here and there are clumps of bamboo and other trees, and the villages are frequent, some of considerable size, and some mere hamlets, with fruit-trees in blossom growing in the gardens. Ahead of us, ninety miles distant from Yedo, rises an irregular range of violet-tinted mountains, their summits capped, or veined, with glistening snow. Somewhere among those mountains lies "beautiful Nikko"—a name well known to all Japanese.

We are visiting Japan just at the right time of year, when these great plains—the mud-flats, as I have seen them described, of an earlier season—are all waving with green and golden cultivation, when the orchards are heavy with blossom, and the soft, bright tints of spring-time clothe the varied vegetation draping the hill-sides, while below azaleas, violets, and other wild flowers cover the grass profusely. The paddy fields are hardly yet, however, a pleasant feature in the landscape, for the rice has not yet sprung up, so amid the vivid green of the barley, and the yellow of the oil-plant there are patches of black watery mud—redeemed in our eyes by the queer figures of

men working in them knee-deep, and by the cranes stepping daintily about.

At the first place we changed we fell in with a nice little Japanese and his wife, who were also travelling our way in jinrickies, so, our coolie horses liking to travel in company, we kept together all day. He was dressed in European fashion—still very rarely seen in Japan—and his wife had not blackened her teeth nor shaved her eyebrows, and a very pretty little woman she was. For you must know that though one sees many ugly girls in Japan, one also sees many pretty girls; but whether ugly or otherwise, the queerness of their picturesque dress is always extremely becoming. All the Japanese have beautiful teeth, and of these natural beauties the women take advantage to make themselves unnaturally hideous by blackening them as soon as they marry; and their eyebrows—pencilled and black—these they pluck out. But, doubtless, with the tide of European civilization setting in, with their husbands wearing boots, and hats, and trousers, the women will soon leave off this barbarous custom altogether. And yet the old custom has its advantages, for a man who would willingly flirt with a woman who has blacked her teeth, and shaved her eyebrows, his case would indeed be hopeless! Let us hope, too, that they will never take to wearing European dress, for their figures are far better suited to their own style of costume. They have done away with all Oriental gorgeousness—these misguided Japanese; the civilian court dress is now the funereal black of the enlightened West; and Western uniforms are all the fashion.

At five o'clock we arrived at a village, where they told us that a river between us and the next stage is so swollen that we cannot cross; we therefore stop where we are, and spend our first night in a Japanese tea-house. Very nice is our reception: come forward the master and mistress of the house, and attendant tea-girls, who fall down on their knees before us, and bid us loudly welcome. We bow

graciously, sit down, and take off our boots, which we leave at the door, and are then shown into our rooms—in this house up stairs.

This custom of taking off boots is tiresome until you become accustomed to it, and learn to see its necessity. It is when visiting some temples that it becomes worse than a bore, for as stony court-yards have to be crossed in passing from one shrine, or temple, to another, so you have to go on pulling off and on again *ad infinitum*. The Japanese so easily slip on and off their sandal form of shoe that it is no vexation to them; but, on the other hand, one would be ashamed to go into their beautifully mat-floored rooms, or into their lacquer-floored temples with anything on but stockings. The Japanese stockings have very thick soles, and the shoe is kept on by slipping a button fixed on the shoe between the big toe and the next.

Our rooms are small and square, divided one from another by paper partitions—the paper being stretched over a light framework of wood. These partitions or screens are made in sections, and slide about in grooves in the floor, so that several rooms can at once be thrown into one. The walls of the room are made in the same manner, the paper admitting a soft and pleasant light, but it is, of course, not the least transparent. These paper walls are only the inner skin of the house; outside runs a more or less narrow passage all round, and at night wooden shutters are put up, inclosing this passage, so that you can walk between the outer wooden, and inner paper, skin of a Japanese house; and a most cozy and box-like effect it is.

The floor is carpeted with clean, bright-looking mats made of rice-straw; they are all exactly of the same size, a certain number of them forming a square; so this is why the rooms are small and square, for they are made to fit the mats, and not as with us, *vice versâ*. The boards beneath the mats are darkly polished.

There is absolutely no furniture; in the centre of the room is placed a metal brazier—often very handsome in design—in which is a charcoal fire. Excepting in the hilly country, where wood is easily procurable, charcoal is universally used for their fires. Round these fire-boxes, in chilly weather, they sit the livelong day, huddling as close as they can, doing nothing but smoke, and sit, and talk; or, occasionally playing a game of chequers. I only once during our cruise saw a man reading a book.

But we are hungry, so we go down stairs, inspect the cooking arrangements, choose a frying-pan, cut many slices of bacon, which, with six eggs, we fry, and then take the dish all steaming, savoury and delicious, up stairs, throw ourselves on the floor, and yield our appetites to unspeakable delight. If we want anything we clap our hands, and up comes running a nice little *mousmee*, who performs our behests. Just for the sake of seeing such a jolly bright little creature, we constantly clap our hands. Then we make coffee and hot buttered-toast over our charcoal fire, and then we smoke,—would not you like to go picnicking with me in Japan?

At dusk they bring in lamps and candlesticks; the first consisting of simply a wick burning in a saucer of oil, and inclosed in a tall paper frame, standing on four legs; and the second is a very high affair, with a spike at top, which is their fashion of candle-sticking.

Later come in the landlady and mousmees, laden with quilts, which they throw down on the floor. These are our beds, and consist of narrow quilts, padded with cotton, both over and under you. The first night, in our ignorance, we only placed one quilt beneath us, and found, in waking moments during the night, the floor becoming harder and harder, until it became quite too hard to sleep on; but about that time it was time to get up. After this experience we piled as many quilts below us as the house could give us, and so, ever after, slept most sweetly. Besides these quilts they give you enormously heavy great-

coats, padded thickly in the same manner. If strong enough to get into one of these, then do you feel so hot, so oppressed and helpless, so generally smothered, that you will probably come out of it again as soon as possible, and lay the cloak simply over you. I took away with me a cunning contrivance—two sheets sewn together in a bag; into this I nightly crept, and so defied the insidious attacks of possible creeping things. But the weather is as yet rather too cold for these possibilities to assume their summer activity—an activity which they do say is excessive; anyway, we came not into contact. These quilts are so heavy and stiff that there is no getting a nest as with blankets, about your ears. We should have taken night-caps and comforters with us, which remember to do when you travel in Japan.

Up early, we go down and have an icy-cold dip in a bath, which bath is a great feature in Japanese life. They say the difference between a Chinese and a Japper is that the first cleans his clothes only, and the second his skin. Of the Chinese I know that their clothes look usually beautifully clean, and of the Japanese our eyes testify that they wash a great deal and in many curious ways, and that, perhaps, their dress has not got the clean appearance of the yellow man's. This bath is a great oval wooden tub, partly or wholly sunk in the floor of a small room. Through the bath, at one end, runs a metal pipe in which is placed live charcoal, constantly renewed, and so for a long time the water is kept hot. In the evening the bath is filled, and kept on going till late at night, during which time Japper after Japper, man and woman, guests and household, go in and have their hot bath, each one dawdling as long as they can, and taking it in turns to go in or out. For the water is never changed, should the name of the bathers be legion, *n'importe*, in they go, and out they come, happy and red as boiled lobsters.

This intensely hot-water bathing is a nightly and invariable custom, so you may imagine—their forefathers,

fathers, and themselves brought up to it from infancy—how great a heat the present generation can stand. In all the villages and towns are public baths, not large pools of water as we know them, but wood-floored buildings, on which each person's tub is placed, and there, men on one side and women on the other, squat and wash, and move about, and scrub themselves tremendously. These public baths are easily discovered by the escaping steam, from the torn paper doors, and from the hubbub inside.

So after tubbing this fine cold morning we think of these things, and the possibility, nay, the certainty that since over-night the water has not been changed, overwhelms us; but then remembering what some great, or little, man said, that the greatest blessing given to man was "dirty water washes clean," we cook our eggs, bacon, and coffee, and are happy. Then picking our shoes out from a number ranged by the door-step, surrounded by a crowd of grinning Jappers, "kow-tow'd" to by the heads and girl-*employées* of the house, we nod to the crowd, and *saianara*! As one man this pleasant and laughing crowd bow lowly, and *saianara*, *saianara* is repeated on all sides as we get into our jinrickies and start away.

The morning is gloriously fresh and sunny, the country looking brilliant, the mountains ever nearer, and the sense of escape from sea life making it all, doubtless, doubly beautiful. Presently we passed a wedding party; first, some men walking, and many attendants carrying, slung from a pole, great boxes covered with cloth. I did not make out the bridegroom, not guessing until we saw the bride what was going on. Her we met a short way further on, coming to meet her *fiancé* from the opposite direction, gorgeously dressed, her face powdered all white her lips painted a bright red, and elderly women escorting her. They and a small following of children, who appeared to think the whole proceeding a very good joke, were dressed as usual. A pretty little thing was this bride, and as we passed she stopped to look at us, and we looked at

her, and I'm afraid I laughed at her painted, doll-like, wonder-struck phiz. For half-a-mile beyond were black-teethed old dames at the road-side, grinning hideously, if amiably ! I should have liked to see the meeting between the two on the road ; we were told that the boxes contained the trousseau and household goods of the new *ménage*.

In course of time we arrived at a broad shallow river, over which we were ferried in a great flat-bottomed scow by two men poling with bamboos, who cleverly reached the wished-for spot on the opposite bank in spite of a tolerably rapid current. This one scow took us, many other travellers, and eight jinrickies all at one time.

And now commenced the beautiful scenery of our cruise :—roads, red-tinted, running between avenues of firs springing from grassy banks, spattered purple and red with wild flowers, and on either side coppices, pine-woods, bamboo groves, orchards of cherries, peaches, and pears, were interspersed with fields.

We luncheoned at a good-sized village, where we left our lady companion, who, first however, ordered our luncheon, partook of it with us, and insisted on our being her guests in the matter of payment. I was very sorry to lose her, for though our conversation consisted only of smiles and pantomime, still she was always a pretty little bit of foreground in the landscape. Her husband, having expressed a wish to follow in our train to see Nikkô, came on with us ; we found him useful, speaking English better than our man, and not wanting to anything like the same extent the kicking process afore-mentioned.

Every mile the beauty of the scenery increases, the mountains close ahead, cultivation lessening, woods more continuous, splendid game coverts, and the beautiful avenue of cryptomeria still lining the road.

Early in the evening we arrived at a large provincial town called Outsenoumea, where we stayed the night in a snug little hotel full of guests. Before dinner we strolled through the town, full of bustle and industry in the way of

toy-shops, saddlers, crockery, &c. We went to the top of a step-ascended hill in the outskirts, on whose summit was a burnt-down temple, and bamboo staging around for, probably, a fair. We were mobbed by a crowd of children, and excited the curiosity of all beholders. We got a fine view from this hill—of the wooden town at our feet, of the cultivated plain, with silvery river winding along it, and of the Nikkô mountains in rear, tinted all beautiful colours in the light of the setting-sun.

To-night we thought that we would try a purely Japanese dinner, and so ordered the most superior meal procurable. In due time two mousmees come in, carrying red-lacquered trays, on which are little basins and saucers full of all sorts of strange eatables. The girls kneel down, one before each of us, sit on their heels, arrange the dishes, and then all eyes and ears (somewhat embarrassing!) watch our slightest movements indicative of a wish. Mightily pleasant they are, these tea-girls, and more charming handmaidens to wait on me I never should wish. I add with sorrow, that they were by far the nicest part of the entertainment. I cannot tell you what we had for dinner, only this I know, that I thought the meal, if not nasty, at least unsatisfactory. Not knowing what particular, of the many, dishes to commence with, I lighted on a small basin in which were—M. declares cockroaches! They may have been so, they may have been dried shrimps; who can tell? Not I; though I ate some. Then I tried another basin—a *chef-d'œuvre*, surely, this of Japanese cookery! In it, plain and undisguised, was a semi-circular section of a bamboo, a large black fungus, some shavings, and what else there was I forget. But need I say that the bamboo tasted like what it was—wood? or that the fungus like what it wasn't—old leather? and that the other things——well, never mind! Then I had a shot at another basin, chopped wood and vegetables floating in froth on the top of water—this I swallowed; and finished up by a basin of rice, over which I cracked two raw eggs: this did

for me, and I bade the mousmees fly, lest I should eat them too in my hunger. Do you wonder at our taking food with us?

But a later experience told me that the young bamboo—pickled—is very good; also that fair mushrooms exist in Japan; and also that you may get an excellent and satisfying native dinner in the country. And this dreadful dinner of ours to-day finished up with an admirable omelette.

Of course when we have a native dinner we eat it, or try to do so, with chop-sticks—the most provoking things in the world, and though looking so easy to handle, are in reality most hopeless and futile. If you do know how to manage them, the harder you squeeze the future mouthful the better; but if you do not know, the harder you squeeze, the more certain is the tantalizing morsel to drop on your lap, or on the floor—anywhere excepting into your mouth. In despair, and no doubt looking very foolish, you appeal to your own particular mousmee for help, and she, shrieking with laughter, shows you over and over again how to manage them. But I gave it up, and took to the more common and convenient spoon of commerce.

Japanese do not eat meat, but fish they eat largely—fresh and preserved. In all the villages up country, as in the great towns, there are fish-shops, where great basketfuls of dried fish of all sizes—from salmon to minnows—are exposed for sale. Rice, too, they eat in incredible quantities; bamboo, fungi, grasses, arrow-root, sea-weeds, seeds, weeds, and all kinds of unprofitable-looking stuff, form, too, part of their diet.

Tea and saké are their drinks; wherever we stop on the road, tea is brought to us and our coolies, as a matter of course, in tiny cups, together with a tray holding the charcoal fire-box, and bamboo cup, for lighting, and emptying into, our pipes. In the inferior tea-houses this tea is simply hot water—bewitched and discoloured; but when made strong, and from good tea, it is very nice and refreshing. I got to like it very much, and drank vast quantities, chiefly I imagine because no one but a bear could refuse it

from the hands of those kneeling little tea-girls. The saké is a spirit distilled from rice, and drunk hot. The best kind is rather good, and our interpreter tells us that two or three little cupfuls will affect him to an unmistakable extent. We therefore beg him to abstain; seeing that so many of the onslaughts on Europeans have been committed under the potent influence of too much saké, we would rather not come across anybody in their cups: and the preliminary arrangements in this country for murdering Europeans, or, indeed, the now bygone custom of gentlemen trying the sharpness of their blades on their own countrymen as well, are so simple and short. Some men meet in a tea-house; they drink saké; they get excited. One man mentions that he hates those ugly Barbarians; the others agree; they drink more saké; they get more excited. First man says, "Happy thought, let's kill one!" "By *all* means," say the others; and out they sally, slashing at the first foreigner they meet. We found we could drink great quantities of saké without any effect on our heads whatever; the experiment of course being, I need hardly say always tried in the interests of science.

Do you remember those Japanese inventions which look like nothing at all except chips of wood, or rolled dried-up leaves, but when put in water expand into shapes of boats, trees, flowers &c.? Well, in the street, we found a woman making and selling them at a ridiculously low price. We bought two dozen or so for a penny, and after dinner we got a basin of water and the little mousmees into our room, and amused ourselves hugely, dropping these things in one by one and watching them expand, amid the delighted exclamations of the girls. It was very babyish, and great fun, as we all sprawled on the floor over the basin of water, and when our purchase was all expended, then we sent an eager little woman after some more—a very charming entertainment altogether.

Our hotel is full of guests, and from the common passage we can hear music in two rooms, and on their paper walls

we see the shadows of girls dancing. We, accordingly, are inspired with the wish to be amused, and have an entertainment also—in this wise—singing and dancing girls to sing and dance before us. This is the evening amusement of the Japanese. These girls are called *geysias*, and are professionals in their art. You can go to some tea-house, hire a room, and see the performance there, or else you can send for them into the room of your hotel. "But what about keeping the other guests awake?" we asked one night, when we were the only people in whose room singing and dancing was going on. "Oh, never mind them!" we were told; and we didn't, though every soul in the house must have been kept awake till far into the night—but no one grumbled.

Their musical instruments are flutes, drums, and guitars—which last they play with an ivory affair, and a twangy discordant instrument it is. Their singing is almost painful to listen to, tremulous squeaks coming from their throats—a chest-note they never utter. Many of the dances, particularly those in which they move about quickly—turning round and round, one foot being held in hand—are pretty; but many are slow and tiresome after the novelty is worn off—acting scenes which you don't understand, and posturing themselves in a long series of positions which you can't comprehend the meaning of. On the whole, however, it is livelier dancing than the Malayan; but I infinitely prefer the Malayan gong music to the twanging and banging of Japanese guitars and drums. These *geysias* are usually very well dressed—the upper ten most gorgeously and in great taste—and perfectly nice in their demeanour.

You must imagine us sitting like two grand Turks on the floor: before us are great china plates containing dishes the girls would like, in one perhaps raw fish, surrounded by vegetables, and in the other pears, preserved à la Japanese and tasting like sweet wood. The raw fish is by no means bad, separates in great flakes, and is a little salt.

In lacquered trays are a crowd of little cups, basins and saucers, some of crockery, some of lacquered wood, waiting with their chop-sticks to be filled from the large plate alongside. There is one basin full of brown oil, and another with raw eggs. This oil they mix more or less with everything they eat, and it is, at its worst, I think, preferable to garlic. There are other trays, too, with the inevitable miniature tea-pot and cups, with little china saké-flasks, with piles of sweet jujuby cake to eat with the tea ; and not to be forgotten is the little charcoal fire-box, into which we empty, and then relight our little Japanese pipes filled with sweet-scented tobacco. These pipes, to which we took lovingly, have tiny bowls, only large enough to hold tobacco sufficient for one or two whiffs, and is at best a trivial method of smoking the fragrant weed. But stopping so constantly as we do for a few minutes only at road-side tea-houses, they become a necessity of Japanese travelling life, not only because you need not light and waste half a good cigar, but also because everybody around you—men and women—are smoking these pipes too ; and when in Rome—you know !

And now back slides the door of our room, and enter numerous damsels, who fall down on their knees before us, bowing their faces to the ground, and then sit down in a row. We salute them also—*ohio, ohio !* smile, look exceeding pleasant, and as if we were quite *au fait* with all their customs. Then follows an interval of laughing and chaffing, of remarks—through the interpreter—to and about each other, and of palpably personal criticisms on both sides ; after which they take their guitars out of the boxes inside which they are carefully wrapped, put them together, and fall to tuning—a painful five minutes of twanging discordant notes, of snapping and replacing of strings. Compared with this, preliminary bagpipe tuning is the music of the spheres. And so having nicely arranged their dress, settled down properly on knees and heels, they commence all banging, twanging, fluting, and

squeaking in grand concerto. Our interpreter tells us that to end this first scene (the wish to do so comes pretty quickly!) we must offer them some refreshment; so we, simultaneously, one little cup of saké in each of our hands, and murmuring gently, bid them drink—"Pretty creature, drink!" and, *sotto voce*, "Stop, stop that awful noise!" and so commences the first *entr'acte*.

Great civilities now pass between us; before each of them we place an *itchibu* (shilling), for such we are told is the custom; we tell them to eat of the good things before them, mutually light each other's pipes, prepare dainty little dishes, compliment each other bare-facedly, keep the saké circulating; we eat, drink, and are merry exceedingly. Afterwards some dance, while the others play and sing, and so with frequent interludes of drinking, smoking, dancing and eating, the evening passes away pleasantly enough, more perhaps from the novelty of the entertainment than from any beauty, always excepting the girls themselves, in the performance itself.

The bath in this hotel was in a recess of a much frequented passage; that of course did not prevent us from having our morning bath, but I do confess to having felt staggered when I beheld assembling round me the amused household, who could not understand the object of a cold bath in the morning. I drove them laughing away by splashing water all over them.

A dull drizzly morning on this the third day of our cruise; the hoods of the jinrickies are put up and covered with yellow oil-paper, hermetically closing us in, and everybody we meet is cloaked with this same bright yellow oil-paper. The weather soon cleared, however, and we had another beautiful day. A few miles from the town we were fairly among the hills, the road being at just sufficient an incline to make it hard work for the men pulling, so we walk most of the way. When out of the town we struck at once into the avenue again.

This wonderful avenue! The original idea was, evidently.

that it should be continuous from the river to Nikkô. For the first few miles the firs are comparatively small and Scotch-looking, soon, however, they become solely of a *Japonica* kind, very tall, straight-stemmed, and densely foliated. On the other side of Outsenoumea the avenue is frequently interrupted, but as we near the mountains it becomes more unbroken, and the trees finer, until to-day it is almost an unbroken line of splendid cryptomeria, in single or double, and sometimes treble, rows springing always from grassy banks, covered with violets, and a red wild flower. These cryptomeria are planted close together, and often grow in a curious way:—two or three separate stems, each a large tree of itself, separating from a common base, close to the ground. An artificial trick, I suppose, practised on them in their youth when they were planted two hundred years ago. We luncheoned at mid-day at a hill-village, built somewhat differently from those on the plain, having only one street, and the roofs are made of wood and far overhanging, instead of being thatched, or heavily tiled. These villages break the avenue, showing the antiquity of their sites, and charming peeps we get of them, filling up the ends of long vistas of rugged trunks and heavy dark-green foliage. At this village the avenue ends where the street commences—on the crest of a hill, up which our coolies have panted with difficulty. What a sketch it would make, the street with all its quaint Japanese rural life—children, pack-horses, jinrickies, heavily-roofed houses—very much in the Swiss style—and, terminating the street, the profiled avenue—a towering double-peaked cone of foliage—thrown out against the white cloudy sky!

Slowly we journey on, the hills closing in on both sides and behind us, while close ahead the snowy peaks of the higher mountains rise above the wooded crests of the nearer hills. Cultivated strips, plantations of young firs, copsewood of dwarf oak and ash, and dark pine woods, against whose sombre colouring the edging groves of young

bamboo contrast softly and brightly, still border the road on either side between us and the hill slopes. At any spot we have only to step off the road to see stretching away to right and left, till lost by the spur of a hill or a turn in the road, this splendid avenue, which, if not in the trees themselves, is in its length, I believe, unrivalled in the world.

On our road we pass, more particularly yesterday and to-day, frequent road-side shrines or temples; around them firs are planted, and if they are at any distance from the road small avenues lead up to them. Outside some there are bronze statues, touched up with gold, of Buddha in warning or quiescent positions, sitting down with tucked-up legs, and gentle expression of countenance; but more commonly there are rows of small stone images—Buddhistical figures carved in relief. Here and there is a group of grave-stones, close-clustered together. The grave-stone is usually of oblong-shape, from one to several feet high, stuck up on end, or else a sculptured figure of Buddha. Neater grave-yards there could not be, spotted about the country, in the woods, by the road-side, or in some temple's grounds. Always prettily situated and never in the way they afford a remarkable contrast to the Chinese system of burial, which buries its dead anywhere, everywhere, all over the country, so that one can scarcely step off the road without desecrating the grave either of some one who died yesterday, or who was buried and finished with ages ago. 'Tis all one, the worship of ancestors hands down from generation to generation the care of the graves of your forebears, and cursed be he who neglects to do this duty, and thrice cursed he who dies without a son to bury him, an event, by the way, which seldom happens, as, if by repeated wives he should have no son, then he adopts some one else's. Behind Canton there are bare, red-coloured hills, which look as if they had the small-pox, so covered are they with great white graves—a hideous effect.

Apropos of Chinese burials (I have just been talking to

a missionary, and was told something I had not heard before, and perhaps you have not either). They make splendid coffins, so admirably made that for years a dead relative is often kept in the house, occupying the best room. From affection only this may be done; but there is another and not so nice a reason steps in as well. As long as this coffin is in the house, no creditor can come in to "dun" them. Another horrid custom; when a husband dies it is the nice and proper (not absolutely necessary) thing for the wife to starve herself to death. Even a *fiancée* will do this because her intended has died. And this custom is considered so honourable that the name of her who acts on it is emblazoned on a pillar by the roadside recording her virtuous act, or with some two hundred others on a great arch spanning the road; permission for this in each case having to be granted by the Emperor.

All phases of Japanese rural and travelling life we meet on our road, a great Daimio travelling in a box slung on a pole, called a *norimon*, accompanied by a dozen retainers; more ordinary people in jinrickishas; one and two-sworded pedestrians striding past—a few looking sulky, and casting never a glance at us; priests, bare-headed, shaven, attired in coloured garments of crape; fleet messengers running almost nude, with letters fastened to split bamboos; wedding parties; strings of pack-horses, heavily laden; and, as we near the mountains, numbers of pilgrims—Nikkô bound. They travel in small companies or families, and consist mainly of old women and men.

The queerest, shakiest, yet withal sturdiest people, are these ancient dames of Japan, cheery, laughing, chattering, and apparently enjoying pilgrimage life immensely. Slowly they toddle along with their bamboo staffs, high-kilted and bundled dresses, white stockinged, very bent legs, high wooden clogs or sandals of straw, and straw hats of enormous diameter—replaced when not required as shelter from sun or rain by blue handkerchiefs round their heads, while the straw hats are slipped over the back.

One marvels, seeing how slowly they move along, how they accomplish the great distances they do ; but they have plenty of time and patience, willingly spending a great portion of their earthly existences in pilgrimages to the famous temples, and the summits of the highest mountains of Japan. Only those who have done with family cares, and such like pothers, turn their steps towards these holy places.

My unfortunate jinrickie-man, a fat, very ugly, but intensely good-natured creature he was, got awfully bullied at one of these mountain villages, where we were stopping for refreshments of tea and tobacco, by an apparently much-injured woman. Whether she was a discarded wife, or what other claim she had on him I do not know, but she was most earnest and voluble, pouring forth a flood of argument, which was received by my "beastie" with perfect composure, and evidently obstinacy. The men around took no interest in what was going on, and my fat friend, sitting there in a slight variation of Adam's costume, sipping his tea, and swallowing his rice, only put in a word now and then. But the mutual courtesy throughout was delightful, there was no invective, no swearing, though the quarrel was certainly serious. It is, I assure you, a positive pleasure to hear the Japanese quarrelling ; they appear not to know what an angry word means, or ever to lose their temper. Whereas, the Chinese have tempers as bad as their language, and at the least provocation both burst out. English ladies will tell you out here that the Chinese nurses teach their children the most awful language, while from the Japanese nurses they never learn a bad word.

Under a clump of tall firs we pass a large shrine dedicated to the fox, and, quite *à propos*, a minute after, we see one slink across the road. Foxes in Japan are sacred being considered the incarnation of evil—to be propitiated accordingly. And here, reared up in the midst of a coppice near the road, is a great rough stone, deeply

inscribed with letters of gold. What does it mean? we ask, and are laughingly answered that it reminds passers-by to lead virtuous lives. Half doubting the truth of the translation we pass on, and look into a mill, whose great wheel a mountain-burn is rapidly turning, lifting by a very rough system of cog-wheels great balks of timber, which fall into hollows filled with grain. A deafening noise going on inside, where we find women in charge, and startle one dreadfully, coming behind her unheard as she is stooping over the grain. She carelessly turns, and there! two ugly barbarian knickerbockered Gowks, one with an eye-glass, and the other with red hair on his face, at her elbow. Poor woman, I doubt if she yet has recovered her breath.

And so we come to Nikkô at last, high up among the hills though reached by a comparatively level road. A steep pull, however this last half-a-mile.

There is one thing which in all Eastern lands you must get accustomed to, and that is to see men toiling most painfully in your service, or rather for the pittance which you give them. You must be callous to the sight of these men, naked with the exception of a waist-cloth, perspiring and panting while you quietly sit down and are cool. You must not mind if a man looks so done up that he can do no more, you still sit down, and say this is well. If, as actually happened to me at Canton, one of the coolies carrying your chair falls down from sheer fatigue, so exhausted that for some minutes he can't even rise, you must still take things coolly, and indignantly ask the creature, Why are you so weak? what mean you by dropping me flop down in the street like this, endangering my limbs? But, seriously, the sight is often most painful; but *que faire?* Why, sit still of course, and take things as you find them, as I said before. It is the custom of the country, and anyway you are spared the customary order, "Away with him to be beaten!"

I find that I must change, or modify, an opinion I had

formed as to Japanese *physique* generally. These coolies who pull our jinrickishas are fine fellows, well-made, with gigantic calves, and muscles in high relief all over their naked, and often beautifully tattooed, bodies. They are strong as horses, with lungs in proportion, and run without stopping for an hour and more at a spell, by which time they will have covered six miles or more. To the innate villany of tailors in general, and of Japanese tailors in particular, must be put down many of those angularities, and the fish-out-of-water appearance of the Japanese when dressed in European fashion.

Nikkô's long and only street, to which the avenue, mingled in a wood of rival cryptomeria, leads, struggles up at an incline the broad bed of a mountain glen. Down the centre rushes a burn, and the houses look particularly neat and clean. We notice many hotels, furriers, fish, and lacquered articles of virtù shops. At the first hotel where we inquired they told us there was no room, so while we waited the interpreter and friend started off to find one, returning presently radiant, having, they said, found a splendid hotel, where we go and take up our abode. A rambling establishment surrounding a long narrow court, entered through a gate from the street; on one side first comes the kitchen, then a new house building, and then ours; on the other side is a bath and other rooms, and our host's own dwelling-house. The landlord is a nice-looking man, and before he lodges us he asks for our passports, which he sends to some official to be visé'd. In one of the rooms we find a rough table, and chairs; this room we scornfully reject, and lodge upstairs in proper Jap fashion. There are no guests besides ourselves, and there are signs that possibly the natives eschew this house given to harbour barbarians.

Having agreed during the day that this night we should sup on a fowl, we give orders to that effect, our little Jap friend volunteering to cook it for us, and in the meantime we go for a stroll.

At the top of the street—the crest of the hill, and two hundred yards from our hotel door,—a rapid river crosses it at right angles. Two bridges, close together, span the river, the one, continuing the line of street, is quite plain; the other, on the left, is gorgeous in vermilion lacquer, and supported on either bank by huge granite columns, looking as old as the river itself. This is a sacred bridge; the bridge over which twice a year, with splendid retinue and procession, the Shôgun passed on his way to the temples beyond. Gates close the bridge at both ends now, never more to be used by that gone-for-ever race of potentates.

Facing us is a dark wood of lofty cryptomeria, and a broad road beneath winding up the hill-side to the temples. All round us are high hills covered with woods or yellow grass. The valley turns to the left, and down it comes the river, and the breeze from over the mountains—fresh, chilly, pure and delightful. Away yet, seen through vistas, and over the tops of fir-trees, are yet higher mountains, and the highest of all, with rounded and snow-capped summit, is known to all Japanese as the sacred mountain Nantaisan. We see nothing of Nikkô's famous temples; they are hidden in yon dark fir-wood. To our right the river takes a sudden bend, and goes leaping down a deep and rocky gully which it has cut in the bed of the glen up which the village street leads. A few yards from the back of our hotel we stand on the edge of this gully and look down on the foaming current.

When back at the hotel we find that we have counted our chickens before they were hatched—the fowl is not yet caught; so with the help of a mousmee we cook the customary eggs and bacon. After dinner we all take counsel over a queer Japanese map of the country, and decide that to-morrow we walk to a lake some ten miles away and higher up among the mountains, visiting waterfalls on our way back. And to do things in proper Jap style we order *cangos* to be ready to carry us.

How lucky we are! another beautiful morning, and a

lovely view from our room, whose whole side is open, over the roofs of the village, and down the glen up which we came. Our cangos were waiting, three men to each. I started in one to see "how likee," and was not long left in doubt. They are wholly abominable, and consist of round trays fixed beneath poles supported on the shoulders of two men. This tray is so small that you have to tuck your legs up like a tailor's, for if you don't they hit the ground; while the space between the pole and seat is so small that your back and neck are painfully bent; the whole affair is hard, and made of bamboo.

Going up the hill-street the men stopped to rest three times, taking the pole off their shoulders and supporting it on a stick which they carry for the purpose. This was ridiculous! at this rate we should never get anywhere, so I jumped out and voted we took no cangos. M. was agreeable, so we told the interpreter and his friend that they might take theirs, but that we were going on foot, and on we walked. But then it appeared that the cango-men were insulted, one would not go without the other, so our friends had to walk the whole day in their patent leather boots and tight Wellingtons—much misery they must have suffered, I fancy.

We cross the bridge, ascend the hill through the fir-wood, pass the temples—still hidden on our right,—walk through a long straggling village where we pick up a guide, and continue along a road running at the foot of the hills, with the river on our left, and some distance below us. We peep into a shrine lined inside with shelves, on which are ranged hundreds of little gilt figures of Buddha and saints, while the outside is plastered with small pieces of white paper, inscribed with prayers, and stuck on by passing pilgrims—a shrine in curl papers. We pass another, built by the side of a miniature lake, with islands, stone-lamps, pagodas, and bordered by clipped bushes—all matching it in size.

The road is good, frequently furrowed across in regular

lines, which we see is caused by strings of pack-horses treading all in each other's steps. And so going up and down hills, through woods, and past a temple, we come to the head of the valley, a small cultivated plain, once evidently a lake, with two hamlets, one of which we pass through, and the other we see on the other side, both nestling under the hill-slopes. The road leads to the right, leaving the valley, across a wooded spur, and then dips down into a beautiful narrow glen opening into the valley below. Steep hill-ridges bound it on either side, and blocking the upper end is snow-capped Nantaisan, looking most glorious, the black green of the lower slopes gradually softening into purple, till first veined, then broken into by the glittering snow on the summit four thousand feet above us. The bed of the glen is wholly occupied by bare rocks, boulders, and shingle, over which the river dashes impetuously. The path leads along the water-course, constantly crossing the torrent by means of rough but sufficiently good bridges. When some way up, we rest and refresh at a tea-house. Here we meet an Englishman on a walking cruise, and, still more remarkable, instead of scowling at one another we talk; he also is on his way to the lake. Pretty little girls attend on us, we drink tea, eat rice scones, and smoke.

On again, still keeping alongside the torrent, which as the incline becomes steeper and more rocky, becomes the more violent and rapid, and of a clear green colour in the quieter pools, till we come to where a wooded fork splits the glen into two deep ravines, down the right hand one of which pours the stream—a long vista of leaping water coming from round a corner above us. By a winding zig-zag path, cut here and there into steps, we ascend an exceedingly steep hill. Half-way we find a "rest and be thankful," from where was a view alone worth while coming from Yedo to see. With that exquisite sense of the beautiful natural to the Japanese, a little terrace is here cut and levelled at one of the windings of the path,

where it touches the edge of the spur we are climbing. In the centre of this is a handsome bronze column resting on a stone pedestal; in rear, with its back to the wooded slope, is a tea-house overshadowed by pines, maple, and birch. Hemmed in closely to right and left, and behind by abrupt mountain slopes, here wooded with fir and leafless trees, and there covered with yellow grass, we lean over the rustic creeper-hung railing, and gaze sheer down on the wooded depths below us, on the torrent foaming and brawling down the glen, on a magnificent *coup d'œil* of wood, glen, mountain, and river, lost in the distance in a *bleudtre* haze. Delicious it was to sit in this tea-house, eating wild cranberries, resting our legs, sipping tea, and looking on that enchanting view.

These dear, queer old female pilgrims! some of whom we meet toiling up here, panting and resting at every few steps, laughing and chatting as usual. Do they go on these pilgrimages because their mothers and grandmothers did so? or from religious motives? or why? I cannot tell, but our interpreter laughs and says something about superstitious ideas when we ask him the question.

When we got to the top we found ourselves nearly on a level with the crest of the ridge to our left, between which and us was a deep ravine, where at one point in some seasons pours a waterfall seven hundred feet high. An easy walk of some twenty minutes along the foot of Nantaisan, through birch-woods as yet untouched by spring, over ground covered with tall bamboo-grass, brought us to the sacred lake, called Chiusengi—a grey-black sheet of white ruffled water, embosomed deep among cold purple mountains, with the mountain Nantaisan rising from its shores on one side. We presently come to a village built on the shores of the lake; it consists chiefly of now deserted sheds for the benefit of pilgrims. On one side of the street, however, there is some life, a few large tea-houses, inside which a dozen shivering pilgrims were eating. We walked to some temples a little way further

on, voted them in no way worth seeing, saw a heap of snow lying in a shadowed corner, read a notice stuck up, in bad English and worse French, that no person was allowed to fish in the lake or shoot near it, and then we went back to a tea-house, where we huddled round the fire, boiled eggs, ate barley cakes, fried rice scones, and drank tea. They tell us that 7,000 pilgrims visit this lake during the season; and also that snow fell two inches thick only two days ago in the street.

And then we retrace our steps to Nikkô, making a *détour* on our way back up one of the numerous glens opening into the valley, where we find a waterfall in a wild romantic ravine, the banks covered with the pink blossom of the wild cherry-tree. Urami-ga-taka is a fine rush of water leaping off a projecting ledge, and falling into a deep chasm below. The spring of water allows one to cross the face of the rock behind it, where water-gods sit, solemnly sculptured in stone, amid beautiful ferns. A hot bath and an excellent dinner finished our delightful day. To-morrow morning we visit the temples, and in the afternoon we leave Nikkô, on our return to Yedo by a roundabout mountain route.

Yes! they are most beautiful, these temples of Nikkô, beautiful as a whole, beautiful too in minutest detail. They lie in an extended cluster on the southern slope of a hill, wooded with splendid cryptomeria, growing both within and without the courts of the temples. The approach is a broad road through the fir-wood. We pass under a great granite arch—the *Torii*—whose thick columns support two cross-beams above. Throughout Japan these arches, built of stone, wood, or metal, indicate the entrance to holy ground—here, a large court bounded on three sides by a low stone wall, with vermilion painted railing running along the top. In the left-hand corner rises a graceful five-storied pagoda, 104 feet high. In front of us—the fourth side of the court,—is a high stone wall of solid masonry. In the centre is a broad flight of steps, crowned

by a wonderful gate, the first of a series of three, each vieing with the other in barbaric beauty.

We mount the steps, pass under the gate, and enter the first court, in which stand wooden buildings wherein are stored the sacred belongings of the temples, Buddhist scriptures, and pictures, furniture, vestments, banners, and all the pagan, gorgeous, fantastic devices that figured in the great religious ceremony performed here twice a year. These buildings are beautiful specimens of Japanese art; round them run ribbons of mosaic and other designs, filled in between with gilt trellis-work, and carvings of flowers, and above are groups of elephants and baboons, admirably carved. In this court are also a guard-house, a stable, in which once lived three white horses, and a cistern cut out of a great block of granite, into which water is led by pipes from a long distance. This water is holy and delicious to drink, to facilitate which, little wooden cups float on its surface. We again go under a great Torii made of metal, and ascend another flight of stone steps leading into a small court, whose wonders are two buildings of peculiar and handsome shape, curving inwards at the centre, and outwards towards the base and roof, and ornamented all over most marvellously, with patterns cut out of gilded copper; there are here also two magnificent old fir-trees, an enormous bell, a lantern, and branching candelabra, all of bronze, the gifts of the Kings of Corea, Liukiu, and of Holland. In front of us, again, is a flight of steps crowned by a wonderful gate—the very triumph of Japanese decorative art. On each side of it, on the top of the low stone wall, extends a piazza, divided into compartments, in which are most beautiful carvings of birds, flowers, and trees. There are peacocks, pheasants—golden and common—storks, herons, ducks, small birds, and many more. Each one is elaborately carved and coloured to the life.

The plan of these gates, throughout Japan, is the same. Above the heavy metal doors, handsomely embossed and

studded, is a large platform of oblong form, supported by solid wooden columns. On the top of the platform all round are other columns, supporting the superstructure on which rests the enormous black roof. On each side of the doors, one on the right, the other on the left—four altogether—are square niches under the platform, in which, guarding the gates, are mythical figures of gods or animals. Sometimes these gates are quite plain, and uncarved; but every inch of these here at Nikkô is carved with figures of men and animals, with arabesques of flowers and trees, and coloured green, gold, white, and vermilion, with strangely harmonious effect. Everywhere the Shôgun's crest—a trefoil—catches one's eye, stamping on every object whose property it is.

We pass through the gate and enter a large court, its back bounded by a high stone wall built against the face of the wooded hill. Midway across the court runs a piazza, with another beautifully carved gate in the centre. Along this piazza runs a broad band of gilt trellis-work, above and below which are ribbons of mosaic, and carvings of birds—cranes, ducks, flocks of small birds, all *chefs-d'œuvre*. Within the gate is the shrine, the *sanctum sanctorum* of the temples. While we were in this shrine, looking at carvings and the paintings on wooden screens, a priest came hurrying in, and taking no notice of us, knelt down before a tablet, and rapidly mumbled a prayer—it seemed almost as if done for our benefit.

And now to the tomb of Iyéyasu, the founder of that great line of Shôguns—the Tokugawa dynasty—which for so long reigned over Japan, which was broken only the other day in 1868, and whose then deposed representative leads now a quiet country-life, resigned to the inevitable—from being the greatest executive potentate in the country to being an absolute nobody. We leave the court by a door in the side-wall, and ascend a long flight of some two hundred steps leading up a narrow moss-grown

gallery, through the fir-wood to the tomb—a massive bronze column, with a bronze table in front, on which stands a gigantic golden bronze crane holding a candlestick in his bill, and a golden bronze vase with a lotus plant in it. A stone-wall and parapet surround the tomb, and two dogs, cast in metal, guard the gate. All around are thick fir-woods, utter silence and loneliness; nothing could be finer or more impressive.

We descend again, meeting in the courts several groups of pilgrims in charge of guides, who in stentorian voice describe the wonders and history of every building in detail. We sat down on the steps and watched them, and I'm afraid the barbarians led many eyes astray from what the cicerone was so eloquently describing. We leave these courts for the shrine and tomb of the third Shôgun, going by broad roads through avenues of fir lined with little booths, till we come to a plain gate in whose niches are gigantic hideous gods. On the top of a long flight of steps is another gate guarded by more hideous gods, and then we come to the temple and shrine. This temple is large and full of priests dressed in flowing robes of crape, coloured scarlet, yellow and violet. Some glide noiselessly about, some sit on the ground reading the Buddhist Bible placed on little black-lacquered desks before them, and all as we enter bow slightly. Before the door, on the highest step, are scattered a heap of coins, the offerings of pilgrims. But this shrine compares in no way with the others we visited just now, which are by far the most beautiful of any I saw in Japan—in Yedo, Kioto, &c.

The Chinese temples at Canton disappointed me terribly. Their priests are dirty, ill-looking and vagabond; their endless stone passages are full of snarling, yelping dogs, and lead sometimes to what? A pig-stye of fat, disgusting sacred pigs! Their gardens grow rank vegetables, the bushes are distorted into hideous shapes of deer, dolphin, and dogs with porcelain eyes, and goodness knows into how many other ugly devices; their ponds, on which

should only float the lotus-flower and leaf, are covered with slime ; there, in that building, are stored huge jars, in which cinders of burnt-up priests are preserved ; there, in another corner, is the cremarium where the operation is performed ; there in that room are a lot of dirty young priests guzzling rice. There is nothing pretty, though it may all be curious, and curious things *per se* are tiresome ; but these temples of Nikkô, and of Japan generally, with their beautiful carvings, rich colouring, and lacquered floors, all glittering with gold and colour, and closely framed by the dense, dark-green foliage of the cryptomeria rising above the roofs and walls—impossible to describe their unique and fantastic beauty !

From Olympus we descend to lunch and siesta ; and good-bye to our little Jap friend, who returns to his wife, with sore heels and his boots all split. Later on, a pack-horse arrives, or rather a pack-mare, which we load with our traps and send on in advance in charge of a woman, who leaves us bowing some half dozen times most profoundly.

In this mountain district mares alone are allowed, while in other districts the rule is the other way.

In the evening we follow, going along the same road as yesterday, but when we arrive at the head of the valley, we go across it to the village in the opposite corner, where we arrive at the same time as the mare, which the woman unloads, placing our things on the verandah of the largest house of the half-dozen composing the hamlet. But we have to wait ten minutes before they will let us in, for they have never harboured barbarians before, and moreover this is not an inn, but the house of the "chief farmer," where we are asking for lodgings. However, after a long palaver with the interpreter, we are admitted, and the wife sweeps out two rooms where we take up our quarters. They are painfully shy, the household ; so not to disturb them in their common room—where is the kitchen-fire, sunk, as is usual up here, in the floor, and over

which the kettle and great rice-pot swing from the ceiling—we made them put live wood-embers into our fire-box, and on that we cooked a kedgeree of six hard-boiled eggs, potted salmon, bacon and unlimited rice, all chopped up together. Then follow buttered toast, coffee, and cigars, as, reclining on the floor, the side of the room all open to the mild evening air, we sip our wine, smoke, and listen to the murmur of the river mingling with the *burr* of revolving hand-machines, in which rustic, fat-cheeked maidens are winnowing rice or millet.

It rained hard during the night, and in the early morning it looked as if it meant to continue, but by the time we had loaded the mare, the weather cleared up. And so we start with parting *saianaras* from the household. The air is fresh and damp, mountain-tops hidden in clouds, mist-wraiths floating slowly up their wooded slopes, wisps caught and lingering among the branches. We cross the river, and leisurely ascend by a winding road the side of the hill; beautiful views as we mount higher of the valley we are leaving; jolly little grey birds hopping among the trees and bursting with short nightingale notes; strings of pack-mares led by boys and women; the road nowhere too steep for comfort, and after an hour's walking we arrive at the top and a tea-house, where, drinking tea, are several well-dressed one-sworded gentry, who we are told are silk-merchants travelling about on foot collecting the silk from the cottages; and we are told too, that they are jealous of seeing Europeans here, as they fear *their* coming to buy silk at a higher price than they give, and so cut them out of what they consider their monopoly—a monopoly which the government protects by closing the country, except through passports.

And now we go down a steep hill into the head of a narrow glen, wooded with leafless trees, and fine clumps of firs, and wild cherry-trees in pink blossom. At the bottom of the hill the path followed a mountain-stream, along which we kept for an hour or so, passing more silk-

merchants, and old country folk wrapt in oil-paper. At the end of that time we came to a small hamlet and strips of cultivation, where we change our mare, and sent the relief on ahead in charge of a bonnie big girl.

While we were drinking in the tea-house the customary tea and smoking our Japanese pipes, it began to pour in torrents. This was very depressing, but we made the best of it, sat round the wood-fire, boiled eggs, and talked to the owners of the house—a charming old couple. Now and then wayfarers drop in, and endless bows and civilities pass between them and the old people, such good manners, such perfect breeding. Here comes one, one-sworded, well-dressed, and good-looking; he bows and bows, and as long as he does so they do the same, all the time exchanging, with smiling looks, greetings and compliments. This over, the new-comer bows more shortly to us and to the other travellers sitting there drinking their tea, while the old lady pours out tea from the kettle and hands it to him—more bows follow. Then they all talk together, and plainly we are the topic. Then more bows between all hands, and away he goes on his road.

Pour, pour, pour for three solid hours; drip, drip from the eaves under which come the handsome and *droukit* fowls. Through the interpreter we have pumped the old couple dry; he has shown us his gun, powder-flasks, bullets and iron-tripod snow-shoes; told us about the deer and the pheasants, for a hunter he is by profession. We have shown them our gold watches and rings, the former never seen by them before, and now looked at with long-drawn expressions of feature and voice. Women pilgrims pass, sit down outside and refresh themselves with a mouthful of tea, and away again through the rain, shapeless bundles of oil-paper and parasol hats above their bent old legs. Will the rain never stop? the old lady brings out her reel and distaff, spinning cotton; the *droukit* fowls look gloomy as ever; the rush of the river, the whirr of the spinning-reel, the pour of the rain on the trees, sup-

pressed indignant chuckles from the old cock, dampness, despair, drip, drip, we must go on and must get wet!

We borrow paper umbrellas, pay for our eggs and tea and warm fireside, and continue our road. The rain soon ceases, at every step the glen becomes prettier, the river, now joined by numberless burns, more rapid, and the trees clothed with foliage. The glen soon narrowed again, leaving but room in its bed for the Scotch-looking river, the path above it following the irregularities of the steep bank, now overhanging the river, and now winding round the head of a small ravine, till suddenly the hill-range on our right came to an end, and we found ourselves in a more open space where two glens converged into one.

But why repeat to you what we are constantly exclaiming, Beautiful! beautiful! What else could these mountain glens be, each with their hill-sides cushioned with foliage; each with a brimming, transparent river; each with luscious gradations of colour, from the dark masses of firs, of mountain laurel, of tawny maple, of feathery yellow bamboo, of budding copse-wood splashed pink with wild cherry blossom, to the tender tints of the middle distance, softening into *bleuâtre* haze far away in low-lying mist and clouds? A little way up this other glen was a small hamlet, small fields and orchards in flower, which continue on our right while we cross the junction of the two rivers; soon after which, about five o'clock, we walk into a quiet little village, situated amidst enchanting scenery.

On the road we had met the lassie on her way back with the mare; she is all shy smiles and bows as we ask her where she has placed our traps, and are they wet? Oh, no! she says, quite dry. We find them in the verandah of a large house, where we are kow-tow'd to by a well-dressed old lady and her two sons. It is all so naturally, so prettily done, that one feels half ashamed not to do so also, but I fear me we should not do it naturally, but we can smile and bid them *ohio!* and this we do.

We are quite delighted with the house and our room, which looks out at the back into a little garden-court, full of camellias and other flowers. On the other side, and above this court, is another house, part of the establishment, and close behind it rises a dark fringe of firs against the side of the hill. The bath-room is private, and just two steps away along the verandah; the kitchen offers everything that can be desired, our hosts seemed delighted to have the chance of entertaining us, and ah, look there, what a pretty girl! whom we just catch a glimpse of hiding behind her mother, before she vanished shyly from our admiring gaze.

Delicious is the hot bath, tired and wet as we are, exciting is the cooking of our soup—made from tins of preserved meat,—and of our kedgaree; then follows a sweet omelette made by the old lady, but before she deftly rolls it up, we insert strawberry jam into its heart of hearts;—*would* not you like to travel with me in Japan? How thoroughly we enjoyed cooking our dinners, and the amused looks of the household as we trotted about from the kitchen to our room, from our room to the kitchen again, no words of mine can tell. It has certainly a fascination all its own, this travelling in Japan, everything is novel and charming.

And now, what shall we do to-morrow? go on our way, or stop here and dawdle among this lovely scenery? We will stop! The news is received with joy by everybody, more particularly by the interpreter, whose feet are sore, and his patent leather shoes bursting and wet. But why came he with such things on? We are sorry for him, though glad to participate in even so small a matter in the instruction of young Japan, but as no cango is to be got, it can't be helped.

A most brilliant morning; a cold wind but hot sun. As we sit in the front verandah smoking our after-breakfast cigar, stretching our bootless feet in the sun, while our bodies are wrapped in heavy greatcoats, there turns the corner of the next house a small crowd of people, who

come up, and place before us a young and vicious eagle in a cage, which they wish us to buy. But we refuse, the crowd disperses, and we go for a stroll.

This village is built along a narrow shelf on the hill-side, some two hundred feet above the river. As we look up the glen the river is seen coming swinging out from a ravine between walls of rock and fir-trees; beneath us it shallows and broadens, flowing rapidly over a stony bed and disappears some distance down the glen among a clump of firs grouped finely on a grassy ledge. A frail-looking bridge crosses the river below us, leading to an opposite small shelf, on which is a single house.

When at Nikkô we were told of a great fire which had just occurred at this village, and, walking along the street, we came to the scene of the disaster, a clean sweep of eighty houses; in fact every house on one side of a brook, which ran through the village. One small house—fireproof—alone remained standing amid the charred remains of the houses around it. The burnt-out population were scratching among the ruins, and a melancholy sight it was altogether.

We had asked at the hotel what there was particular to be seen in the neighbourhood, and they pointed to a gap in the hills behind the village, and said something about a waterfall. The Japanese always appear to have an underground plot to show you a waterfall, if you chance to be within range of one at all. In the entrance of this narrow gap in the hills, we passed some pits exhaling a strong odour of sulphur, and presently came to a ravine where the burn fell in cascades between high walls of grey rock. Between these walls, trunks of trees, resting on ledges, are laid across, and planked roughly over, at a steep incline. Wondering where all this leads to, we climb up the rocks by means of steps, then keep along a path through woods, and find ourselves in a hollow among the hills, which, piled up all round, are singularly bare of foliage, and coloured reddish. A few blown-about sheds, troughs and

water-conduits reveal to us the meaning of it all—mining. Some women were in the huts pounding away at nickel and copper ore. They tell us that the mine is much higher up, and so we turn back to luncheon.

In the afternoon we dawdled, going up the glen to the hamlet which we passed yesterday. The only person we saw was a small girl, playing with two babies, which last howled with fright at the strange apparition, and in spite of our would-be winning smiles the little girl struts away in a passion, loading us with abuse and bad names,—I'm sure they were.

It was delicious to lie down on grassy banks, covered with dog-violets and other familiar home flowers, the sun pleasantly hot, the foliage on the hill-slopes waving in the breeze, the air odorous with the resin of the pines, and, underlying all other sounds, the splashing drone of the river. At our end of the village scarcely a soul is moving; a few children in verandahs, a girl laying out millet to dry in the sun, and at the bottom of the bank a bevy of girls washing clothes in the river. One of these looks up, catches sight of us looking at them, says something, and all burst into a merry laugh.

Cherry, rhododendron, and camellia trees (not bushes) grow between the scattered houses, each in wondrous blossom. The roofs of the houses are flat and projecting, heavily loaded with rows of large stones, in Switzerland fashion. The gusts of wind which sweep down these deep narrow glens must be very heavy sometimes, and as for those mining sheds, some of them were smashed right in by the force of the wind. And so having drunk our fill of scenic enjoyment, we now turn our thoughts to filling,—I mean to dinner. The pretty girl, bother her! is still shy as ever, bolting like a frightened rabbit whenever we enter the kitchen, and it is utterly in vain that we reason with her.

Certainly I have never travelled in any country where I knew, or understood, less of the language than I do in

Japan. Here is an instance of our helplessness. We are lying on our quilt beds, and just going to blow out the candles, when enter the boy of the house. "Hey?" says he; I shake my head, "No, no want you!" "Hey?" says he again, more energetically than before. I repeat my remark, more violently shake my head, and point to the door. "Hey?" he reiterates, looking distressed, and now dropping down on his knees and hands before me, "Hey?" M. by this time is in suppressed roars, and I am not much better. Again and again I implore him to be gone, to vanish, to leave me in peace; but no he won't, and we now are speechless with laughter. His position is so odd on all fours there by my side, his face so puzzled, his "Heys?" so unintelligible, and his smiling patient dismay as he watches our convulsed condition so all too ridiculous, that at last we had to awaken the interpreter and make him tell this idiot that we wanted nothing but that he should GO!

The next day we had a delightful walk through lovely scenery. We started from this mountain village at eight o'clock; the pack-mare having been sent on ahead, Wretched animals they are—one and all, these mares, looking too weak to lift even their hoofs, encased in straw shoes, as is the custom in Japan. The shy girl came out to kow-tow us away and she is the only one of the household who, I imagine, is glad the ugly barbarians are going. We walked briskly down the glen for a couple of hours, when we came to a small village, where we got a new mare, and saw for the first time signs of having entered the "silk district"—in nearly every house women and girls are spinning the silk from cocoons.

While waiting for the pack-mare, which they are bound to provide at a certain rate, we went into a young woman's house, where she boils us eggs, gives us dried apples, and makes herself generally charming. To our surprise in answer to our request (in Japanese) for eggs, she answers, "All right!" but that is all the English she knows. One of

the geysias who the other night danced before us, and such a desperately pretty one she was too, also surprised us by saying, "I thank you!" in answer to a remark of ours that she was very pretty. She took the compliment quite gravely—as, indeed, we intended she should.

Such a crowd of merry children, always ready to burst out laughing, crowd round us at these villages; and what fun it was to turn suddenly round on them, and away would scamper the whole lot, shrieking, laughing, and tumbling over each other. I must tell you, it is noticeable that Japanese girls have a very modest disposition as regards staring, or being stared at, and it is only when in these as yet rarely frequented parts of Japan, such an outlandish thing as an eye-glass, or a red beard, appears in sight, that their attention becomes utterly absorbed. If in these small crowds of country-folk you fix your admiring glance on a girl, she will probably hide behind some one's back, whereat you laugh, and the crowd laugh, and the girl looking very shy is dragged from her hiding-place. On one occasion, however, I winked at a girl; she burst out laughing, clapped her hands, and informed those around of this remarkably funny event, and all stared hard at me as if hanging anxiously on the hope that this wink of mine would be repeated—but it wasn't!

The ravages of small-pox in many parts of Japan are terribly visible, pock-marked faces, and many of the children with one eye gone.

We walk on again for two hours, then change the pack-mare at another little village. I wish you could see these young mothers of Japan, who might be comely, but for their blackened teeth and absent eye-brows. Each one carries the inevitable baby, while other babies are slung loosely on to other babies' backs, hardly bigger themselves than the pink-legged little burdens they are carrying. The baby and child-life in Japan is immense; the very young ones are strapped on to their brother's or sister's backs, who bump and dash them about, sing to them, and

stand for hours moving from one leg to the other with that rolling motion essential, I understand, to babies' existences. It struck me as being an admirable method of getting rid of tiresome children, this strapping them on to each other's backs and sending them away to entertain each other. But the love of the Japanese for their children is very pretty, and abundantly evident, and they don't kill them either, as they do in that most horrid of all countries, China.

In every cottage of this village, too, silk-spinning is going actively on. An hour's walk more, and we arrive at another village, situated at nearly the end of this most beautiful valley.

Near the summit of one high hill, along whose foot the path ran, is the cave—so Japanese mythology says and believes—where lives the God of the winds, a hideous green-painted gentleman whom we saw at Nikkô guarding a gate. Round his neck he carried a bag full of wind, one end of which he holds ready to slip forth a tempest. Priests and pilgrims go periodically and worship at his shrine, and by the roadside is another one of these great unhewn stones, in which is deeply cut in letters of gold the name of the sacred hill.

Down the whole length of glen the hill-sides are clothed with trees; here and there at long intervals are a few farmers' houses standing among small patches of cultivation; and now as we approach its mouth hamlets lie clustered far below us on the river's banks among orchards and walnut-trees.

On the road we took shelter from a light shower in a cottage where several girls were at work with the silk. It is odd that I for the first time should see silk-spinning and weaving in the heart of Japan! It is the prettiest work imaginable. The cocoons, each the size of a bantam's egg, are placed in boiling water, kept so by charcoal fires underneath. A girl sits in front with a piece of wood in her hand with which she keeps all the cocoons in a

corner of the pan, then with one hand catches the threads of a dozen or more cocoons, which, manipulated in a puzzling way, all unite into one between her rapidly moving fingers, and then is wound on to a small reel which she turns with her other hand. The cocoons go bob, bobbing, and turning round and round until all the silk is off, leaving only the black "core." I thought it looked most fascinating work, and but for the boiling water, which makes the hands so red, might be a pleasant occupation for anybody. They showed us the silk-worm eggs, spread thickly on thick pieces of paper, which were to come to life in a fortnight or so.

In this last village of the valley we stayed for some time in a large tea-house, where a dear little girl plied us with tea, and a boy cracked walnuts for us, and swallows flew in and out of the house to their nests which were built inside. They told us they liked to have these swallows in the house, where they were shut in regularly every night; it was delicious to hear them twittering from all the corners of the roof.

Then we crossed the river by a bridge, and ascended the wooded hill-ridge on the opposite side, meeting strings of horses loaded with bales of cocoons. The view from the top of the hill was very fine, the plain stretching away from the foot of the mountain range which continued along the other side of the valley. After a three hours' walk we arrived at Omama, a town with one very broad street, the usual burn running down the centre, dogs barking disagreeably near our legs, an amazing number of fish and food shops, and the population at their doors looking at what in Omama is still an unusual sight—the ugly barbarians. We went to the village office, while emissaries are sent to find us an hotel, for if we can't, our interpreter tells us, we must go to the head man's and demand a lodging as a matter of right. Things are done with a high hand in Japan. After some time rooms are offered us in a hotel on the opposite side of the road, to which the head

man—who was intensely polite, even carrying our traps—led us in state amid a crowd of excited people.

They are very busy in this hotel, which is full of silk-merchants; a great bustle in the kitchen, and we soon see that it is hopeless to expect our bacon getting cooked there, so we cook it in our room. They brought us delicious little trout, caught in the river I suppose with bamboo rods, which we saw men carrying into town just now. We fried them ourselves in butter—such cooking, such excellent little dinners as we always improvise! and such a jolly little maiden to run about for us—so active on her legs, so bright in her eyes, so untiring in her efforts to please us, and so successful! No, I forgot, there were two of them. This little thing is, I suppose, about ten years old, the other is somewhat older. They are both prettily dressed, and have all the manners of people very much older. It is the custom for these girls to wait on you kneeling at dinner, but we usually send them away, and if we want anything we clap our hands, and the little girl comes pit-a-pat, pit-a-pat, with her bare feet along the verandah passage, slides back our door, drops on her knees and says "Hey?" We shout to the interpreter through the paper wall what we want—plates, saucers, rice, or whatever it may be—and he repeats it to the girl, who says "Hey!" jumps up, pit-a-pats back, and brings us what we want. I have fallen in love with at least a dozen little Japanese mousmees, aged ten; so should you see, when I come home, some strange things following in my train, you will be able to guess what probably they are!

Next morning we journeyed on in jinrickies for a silk town one hour away. We went slowly, for the roads were heavy after the rain of last night. Everywhere we saw signs of an active silk industry, mulberry-trees in the fields and forming hedges, girls spinning in the cottages, pack-horses with bales of cocoons, and here and there a small water-wheel outside a cottage manufactory. The morning is perfect, the air champagne-like and exhilarating,



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the lights on the wooded hills lovely, and the fields interspersed with orchards, cottages, and trees. A smiling land truly this!

When arrived at the town we went to the office, from which the head man courteously leads us all round the town, to show us what can be seen of the silk industry—manufactories, shops, and dyeing establishments. In the first we went to, several girls were weaving silk into long sashes of beautiful patterns by means of complicated, cumbrous-looking machines. One girl sits down below, works the treadles, and throws the shuttle with marvellous dexterity, while another girl sits on the top of the heavy wooden frame and arranges the pattern; but to me the whole arrangement was, and is, chaos.

The adjoining building was a very nice house, and we sat on the verandah and drank the tea and ate the *bon-bons* that they offered us. Sitting inside were a number of well-dressed boys and girls sorting the silk. They showed us sashes, called *obis*, which appear to be the principal articles made here, ranging in price from five to forty dollars, but I think it would puzzle you at home to know what to do with these sashes, which are all eleven feet long by two broad. They are, however, an indispensable item of the dress with the Japanese women, and, doubled lengthwise and wound round and round, secure their dressing-gown style of costume.

Then we went to a silk-shop in the street, where a great crowd surrounded us, for foreigners are as yet unknown here. Then to a dyeing establishment—numberless tubs sunk in the ground full of blue dye, in which they are dipping and rinsing the raw silk.

In another street we found a busy and pretty scene. Down each side ran a rapid burn turning five hundred little water-wheels, which were connected with the thousands of machines in the houses lining the road. From these, as we pass, come out crowds of women and girls. My ideas of silk will always in future be

associated with this street, its five hundred wheels flashing in the sunlight, and its hedge of girls, all looking so clean and fat and happy—such “*ohio-ing*,” such laughter as we walk along nodding our heads—the admired of all beholders!

Whichever manufactory we look into we are entertained by its master with tea and sweeties, while the girls are allowed to knock-off work and stare. In the last one we visited there was a very pretty girl—famous for beauty, we are told, in the district. And she is an heiress, too; my conscience, what chances one does miss sometimes! She was very shy, but the eye-glass and red beard quite overpowered her for a while, and it was only after we had glowered at her for some time that she recollected herself, and vanished behind an ugly and, of course, *not* shy girl.

It was all very interesting, this Japanese silk town; they tell us that the girls who work at the silk are most wretchedly paid, but they certainly don't look like it. And now we exchange endless bows with the head man, and tender him our warmest thanks as we get into our jinrickies and drive away amid a chorus of *saianaras*. Really to watch our interpreter and this official exchanging their farewell shots it looks as if they would never leave off. They take off their hats, and standing sideways to each other they bow and bow, at each bow sliding their hands down their legs, and when you think surely they have now finished, they commence afresh as hard as ever. And this is a ceremony which one sees going on around one every minute, and between all classes of people, from the very lowest to the highest. Compared with them we are bears.

All day we drove over the plain—one sheet of cultivation broken by small woods, hills covered with pines, and the grass underneath spotted red with wild azaleas. The villages we pass through have a holiday look; the girls and children wear dresses of the brightest colours, and

strangely patterned—blue, violet, purple, scarlet, and gold ; and they all carry little paper parasols coloured crimson and white.

Above many of the houses there are reared tall poles, from which, swinging out in the wind, are hung great paper bags, cleverly shaped and coloured to represent fish. Some are very large—several feet in length—and some are small. From many of these poles as many as three fish are streaming in the breeze, but more commonly there are only one or two. The signs of fish-shops, of course, we thought at first, but no ! each fish represents a child born in that house during the year. A pretty custom, surely, and overlooking the villages from a height you can count the number of births at almost a glance.

Now and then we stop, as usual, at small roadside tea-houses ; very modest they are hereabouts, for we are in a quiet part of the country. But what a charm there is in their surroundings ! Here, as in the towns, though there they are smaller, each house has its miniature garden, its little dwarf trees, pines, palms, and maples of all shades between brown, pink, and red ; its pool of water, rockwork, fernery, and lantern carved of stone ; its clipped bushes and flowering shrubs—red camellias, pink azaleas, purple irises. You never saw such enchanted back-yards in your life ! And it is the same with everything ; of a hopeless puddle they will make a little pond, surround it with rock-work and ferns and flowers, and presto ! the ugly puddle becomes a charm. ' All these little tea-booths are full of flowers, planted often in bamboo pots, while green branches are laid between the dishes holding barley-cakes and scones of rice. Often outside these houses you will see a stone trough, full of wonderful gold and silver fish, into which plays a miniature fountain, spouting out of a bamboo pipe.

Late in the evening we arrived at a town, where also we struck into one of the two great high-roads leading from Yedo to Kioto. That we are in the high-way is evident

from the crowd in the street, and from its length and large houses. Our interpreter who, as always, has gone ahead to look out for an hotel, returns and says he can't find one that is not full, so we go to the office, whence emissaries are sent to find us quarters, and where we are entertained by the oddest old lady imaginable, who pours forth a flood of talk to which no one but ourselves pays any attention. The official, her son I imagine, sits sulky and silent, and the coolies around are inattentive and bored. At last the interpreter appears, having found rooms, but bad ones he says: but he always says that; we find them quite good enough, though an apparition as of a boiled lobster, warns us that the bath will not be for us.

We bought and cooked some delicious little fresh trout which we ate by the dozen, and then we went out and amused ourselves in the orthodox fashion—with singing and dancing geysias. Towards evening in these towns of Japan you see these girls all beautifully dressed, wending their way towards the houses where they practise their several professions. The upper ten are got up with painted faces, and look most dreadful, with their set white cheeks and reddened lips; some are attended by a man, others by a woman, who carry their mistresses' guitars. Some have their hair stuck full of enormous pins, while some have none at all. A favourite hair-pin with the Japanese has a large, hollow, glass head, in which is a little red-coloured liquid.

All next day we trundled along in jinrickies along the great high-road, changing pretty regularly, and stopping often at large tea-houses, sometimes in a village, sometimes standing alone at the road-side, and all full of travellers, refreshing themselves. Numbers of tea-girls are in attendance, some cooking, some carrying refreshments, some sitting on their heels before the guests. As we stop in front of these houses, the girls shout out words of welcome, "Come in, come in!" And then they vie with each other

as to which of them shall help the barbarians, while all eyes are turned on us, and all the world—tea-girls, guests, and jinrickie-men—laugh, and chaff, and stare for a moment, and then all set to work eating again. What fun it all is!

In the evening we arrived at a town six miles from Yedo, where all the hotels were full, excepting one, and in that they, for a long time, would not admit us. No, said they, we have never had Europeans in the house before, and we don't know their ways. But, once admitted, we are made as comfortable as possible, the rooms are charming, and after dinner we had geysias in, and the household came in too, and we became amazingly popular.

The next day we drove into Yedo, passing nests of tea-houses, where comes the gay world of the Japanese Capital, as we in London go to Richmond, &c. But the Japanese tea-houses are pleasanter far than any Star Hotel. Arrived at these pretty tea-houses, built by the sides of streams and ponds, and overshadowed by fine trees, we are regaled with piquant little repasts, served by merry little tea-girls, who wait on us most charmingly. I need not say that the severest Mrs. Grundy could find nothing against these girls: it is a part of their duty to be pleasant and merry, and to amuse their guests. They do all this to perfection.

This peculiar phase of Japanese life—the tea-house—stands quite alone among the pleasures of this world: no other country has any institution resembling it at all. This lolling on the beautifully matted floor of a large room—low-ceiling'd, cool, and pleasantly shaded; these quaint little "mousmees," some sitting by you on their knees, some shuffling about with bare feet, bent knees, and bodies thrown forward—for women in Japan never step out; the doll-garden, the foliage, water, and sunshine seen beneath the low, projecting roof round three sides of the room—all makes a delicious picture of how passes in great portion the merry and easy stream of Japanese life.

Certain I am that I have not come across any people, excepting some of the South Sea Islanders, so habitually happy in their manners and looks, so easily amused, so childish, so courteous and gentle in demeanour, in my world-wanderings before.

If I had been here when one dared not go near a two-sworded man if it could possibly be helped, then perhaps my ideas of Japan would be different from what they are, but you see I only saw half-a-dozen two-sworded men the whole time I was there; for they are relics of the past already, and the *jeunesse dorée* of Japan tell you that they would ridicule anyone who appeared in what was a few years ago a necessary part of their costume.

Yedo is an exceedingly pleasant town. In the daytime it is delightful to be trotted swiftly about the streets in jinrickishas, visiting silk-shops, fairs, theatres, wrestlers, book-stalls, temples, and parks planted with fine cryptomerias, and studded with little tea-houses, each attended by their fascinating maidens, at least fascinating they try to be as they all clap their hands, and shout to you to attract attention—the prettiest winning.

And at night, also, it is curious to stroll about and look into the numerous bath-houses, easily made out from the babbling within and the steam issuing through the doors; or to step into tea-houses, and there ordering a repast, to get singing and dancing girls into the rooms to caterwaul and go through strange performances which they call dancing; or, again, to jump into a jinrickie and trot swiftly through many miles of streets till we arrive at a very gay quarter, all tea-houses more or less with paper lanterns hung about in all directions; great crowds in the road, and parties in the open well-lighted rooms both upstairs and down, enjoying their dinners, while geysias sit round them twanging and squeaking.

And unlike anything one has done before, is the late return to our quarters in the cloudless moonlit night, our jinrickie men running hard, shouting to the people to make

way, and each, as do the passers-by, holding great paper lanterns. And so we come dashing out of the dark, narrow streets, into the heart of the city, not here the mercantile centre, but the Shôgun's magnificent old fortified castle, a great garden-park, raised high above the general level of the ground around it, and surrounded by broad triple moats and granite walls, over and through which we spin by wooden bridges and shadowed arches, keeping now for a while along the inner moat, from whose opposite bank rises a high grass glaucis, crowned blackly against the bright night sky by ramparts, and the weird forms of Japanese conifers, all mirrored in the calm waters of the moat below.

I must tell you how a deputation of us was presented to the Mikado, who is now living in some prince's house, outside the fortified grounds within which his own palace was the other day accidentally burnt. We went in three carriages, and in full dress, the Ambassador's English escort riding ahead and in rear. Arrived at the palace, having driven past guards of soldiers, and through walls covered with grass-turf, we were received by the household officials, dressed in uniforms of European fashion. In the room where we wait, which has the usual painted paper walls, is a table and handsome gold-lacquered chairs. We sit down and smoke. Sir H. Parkes goes in first, and delivers an autograph letter from the Queen—just received, after which we all troop in in Indian file, very fine! We walk through several rooms until we arrive in that where the Mikado is standing by the side of a chair. We bow as we enter, range ourselves in line, bow again, and advance diagonally (this formation consequent, I imagine, on the shyness of those on the left of the line) the Minister on the right front-extreme, I almost on the left rear-extreme. Three steps and bow; three more steps forward, and again bow!! three more, and again bow!!! and yet three more, and again bow!!!! By this time we have arrived close to the Son of Heaven, who stands quite

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motionless. The Minister has the honour to present us one by one; we bow low as our names are recited. The Mikado does not speak (I think), but one of the attendant officials says that the Mikado is very glad to see us. He does not look like it, neither bowing, smiling, nor speaking, according I doubt not to Eastern etiquette, but that of the Western world, I can testify, is much pleasanter. We retire as we entered, only backwards this time, and it is all over. The Mikado's uniform is rather good, well cut, gold-striped white trowsers, and a swallow-tailed coat laden with gold embroidery.

Of all the "sights" in Yedo, Shiba, where many of the Shôguns lie buried, is the most beautiful. But Nikkô is far more beautiful, I think, in situation, in architecture, in profuse decoration, and in Japanese fine art generally. Here in the mausoleum of Shiba, the tombs stand in a row, separated from one another by walls. The shrines and temples are inclosed within large courts. The main temple was burnt not long ago, as was another of Yedo's finest temples, standing in other grounds. They say this is priestly incendiarism, perpetrated by those who wish to vent their spite at being dismissed from their easy life, for the reforming government of young Japan have cut down ecclesiastical revenues right and left, advised the priests to break their vows and marry, and have generally, as far as they dare at present, carried desolation into the camps of the Buddhists.

For you must know that Buddhism in Japan—the religion of most of the Shôguns and of the people—means beautiful carving, painting and colouring, and the finest decorative architectural art is to be found in the Buddhist temples; but Shinto-ism—the Mikado's religion and therefore the orthodox faith—means utter simplicity, bare wooden columns, &c., and the only emblem, of which Buddhism has a gorgeous number, of the god, is a small mirror. But for ages the two forms of worship have in these temples and their insignia become mixed, so the

reforming government proceeds to what they call "purify." Magnificent buildings ornamented with *chefs d'œuvre* of carvings and paintings, with columns lavishly lacquered with gold, and the floors with vermilion and black; with ceilings and friezes of exquisite pattern and colouring are ruthlessly pulled down and scattered to the winds, while their army of priests are dismissed and told to get their living elsewhere.

This has happened to one group of temples near Yokohama, but Shiba remains still untouched by Vandalism. The courts are lined two and three deep with gigantic lanterns, cast in bronze and extremely handsome in shape. The chapels are marvels, the columns covered with gold, the floors black and vermilion lacquered, the altars heaped with rich insignia, and outside, running along low piazzas, are wonderful carvings of birds—cockatoos, birds of paradise, argus-pheasants, wood-peckers—and of flowers, above and below gilt panels of trellis work. Through these walls we pass under wonderful gates covered with carvings of dragons, flowers, birds and trees to the tombs behind, guarded by granite gates. The tombs are bronze columns, simple, but strikingly grand. Above the curving black roofs, along which gilded dragons crouch, and the Shôgun's crest is everywhere studded, rises a bank of cryptomeria foliage all around these courts and temples of Shiba.

From Yokohama the ship went to Kobé in the "inland sea." One hour by railway brings us from there to Osaka, the line running for some distance between the sea and a close hill-range, through fields, orchards, and villages; and then over a great plain with sandy soil, luxuriant with barley and millet, watered by large rivers, dotted with hamlets, and bounded by distant blue hills.

Osaka is a very large town, built on the shores of an immense bay; the population is half a million, the streets particularly narrow and clean, and through the town run two rivers, one of which splits into three; these larger arteries are everywhere connected by a network of canals.

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It is the Venice of Japan, the pearl among her cities. The rivers are broad, the canals narrow, and the banks of both are walled with stone. Standing on the bridges which span the canals, you look on lanes of water running between closely-packed houses, overhanging the streams. Looked at individually, the houses have a ramshackle appearance, but the whole effect is very picturesque,—the quaint little girl-figures standing, high-kilted, on the ladders as they dip their pails into the water, the broken line of flowers and dwarf shrubs in bamboo pots, and now and then a boat passing rapidly by, poled along by clothless men. Boats, large and small, laden with merchandise or passengers, sailing, drifting with the stream, or being poled against it by men with muscles worthy of Hercules, swarm on the main stream of the Yodogawa river. At night the canals are full of house-boats, lit with paper lanterns, and by whose light you see the geysias performing within—all very gay and pretty.

We are lucky in timing our visit to Japan. An exhibition is being held at Kioto, the Mikado's old capital, and for one hundred days that town is open to all foreigners to whom their Consul will give a permit. At any other time the only way to get to Kioto is by a passport secured from Yedo. We go there in jinrickies, each dragged by two men, strapping, fine young fellows, graceful, strong as Apollo. They ran the distance, a little over thirty miles, in five and three quarter hours, stopping twice for a few minutes to guzzle a basin of rice and swallow some tea.

These running men are one of the many marvels of Japan. It must be, and is, ultimately ruinous to their health, but in the meantime they trot on and on as unweariedly as horses. Their muscles are iron, their lungs inexhaustible, their tempers angelic. With the exception of the loin-cloth they strip naked; a flat straw hat of several feet in diameter is perched on the top of their heads, and on their feet are thick straw sandals. And

away they start with us running hard, shouting, jumping, and laughing with a thirty mile run ahead of them!

The road leads across the plain, which soon becomes a very broad level valley between distant hills, and gradually narrows as we advance. The Yodogawa river flows down on our left, the road sometimes running along the banks, and when not, the river's course is marked by the great square sails of the boats, which, seen above the fields of barley and millet, are stemming the current with a strong favouring breeze.

We pass through many small villages full of children, girls, and women, whose husbands and brothers are out in the fields, or somewhere. It is a very hot day, the few men we see are almost naked, the children quite so, and the women are without their upper garments, a "rig" for appearing in which in Tongatabu they would be fined several dollars; but you see we have no missionaries here yet, nobody has told the Japanese, and it never enters their heads that they are in any but a decent costume. The women are spinning cotton at their doors, and they look out as we pass and bid us *ohio*! The population is decidedly better-looking than that around Yedo. The tea-houses are wonderfully clean, and we luncheon in one of them off eggs, rice, and tea, three things one can always get in Japan.

We trotted through the outskirts of Kioto for more than an hour before we arrived at our hotel, situated picturesquely on the side of a wooded hill in the grounds of a temple of which it once formed a part. Round about are trees, among which here and there are pretty little tea-houses, and from the rooms we overlook the town spread over the valley below us, and extending to the range of hills opposite. A most lovely spot. This hotel is kept by a Japanese who has some Dutch blood in his veins, so we feed off tables, sit on chairs, and sleep on beds. My bedroom opens on to the verandah, and that on to a pretty little garden, full of dwarf shrubs, flowers, and rock-work.

It was delicious to throw back the paper wall of the room, and walk about on the verandah on these sunny sparkling mornings while dressing.

Kioto's streets are delightful, and Kioto of all towns in Japan that I saw is the most attractive. All the world is in gala attire, for high holiday is being kept in honour of the great Exhibition. The girls are beautifully dressed and look lovely; they are famous in this province for their beauty, and they deserve to be, being fairer-skinned and prettier than their sisters of Yedo. Their dresses are very rich, scarlet "obis" and petticoats, and dressing-gowns of gorgeous colour and fantastic patterns, the turned back cuffs and collars being also coloured scarlet, and worked with gold thread.

In some streets almost every house is a shop—photographers, tobacconists, toy-shops, &c.; of these last there is a wonderful number, full of little figures of doll-Buddhas, &c. They make dolls, also, which are amazingly like babies. I was very much taken in on one occasion travelling from Yedo to Yokohama in the same carriage with a girl carrying what I felt sure was a real live nuisance, but after some time, surprised at its silence, I examined it and found out my mistake, much to the girl's amusement, for it was only a doll.

One street was full of fairs, theatres, archery-galleries, tea-houses and jugglers, and here we spent a whole day, and never felt tired of it. In a fair was a Madame Tussaud; figures of men and women, made of bamboo and wax, in all sorts of positions, who move their arms at intervals, fanning, fighting, guitarring spasmodically. Stuck among the branches of trees were decapitated heads, ghastly objects, which as you watch them suddenly blink their eyes, snap their jaws, and perform other startling feats, while blood trickles down from their gory throats.

The archery-galleries are very numerous, and are typical of the childish character of the people. We enter a room at whose further end are a number of small targets of

different sizes, some made of metal, some of parchment. Two girls appear out of a side door, and hand us miniature bows made of whalebone, and ornamented with silver. The arrows are about a foot long, and beautifully made, with blunt ends. Our attempts at straight shooting are ludicrous; but now give your bow to that pretty girl—such hands and feet, so tastefully dressed! Her every shot is fatal, flying straight to the mark, and a small target, the size of a saucer, she hits with surety every time. This game is much played in private houses. A young interpreter whom we took in the ship shot well, and was very keen over it.

Speaking of him; he was one of the "Samurai," the gentlemen, fighting gentry of old Japan, privileged to wear two swords, and do pretty well what they liked. On the way down from Yokohama we caught a shark, and triced him up above the deck. We handed our interpreter a Japanese sword to show us what he could do, which was more than we could, for he cut off sections, through the back-bone and all, at a clean blow. We complimented him on his proficiency, to which he naïvely, and slowly, and smiling made answer—"Oh yes, I am accustomed, I have cut off de heads of *three—guilty—persons!*" A nice young man! He is quite young; but from early youth they are taught swordsmanship, and their legitimate practice was testing the sharpness of their blades on the necks of condemned criminals by taking the executioner's place. By a quite recent edict, I believe, they are no longer allowed to wear swords. I bought a number of miniature bows and arrows, and will introduce the game at home; I only wish I could bring the room and the girls too, but one must draw the line somewhere. Besides this game with bijou bows and arrows, they also shoot with large ones.

We went into several theatres in which the plays go on all day. One which we visited was very select, a well-dressed audience sitting on the floor and in a gallery

running round the room above. As we come in, four tiny people are on the stage, frisking and flirting desperately in sets of two: persuasive gestures and gambols are followed by a general run away: when in comes a man—dressed as such at least—wearing a mask. He stamps and rushes about, stops, shakes his long-haired mask, and finally dashes off, presently returning, and dragging after him one of those tiny little women whom we saw gambolling away so gaily with quite another man. I fear me this is her husband, and that the other man was not. She sinks on her knees, and he roughly ties her hands behind her back. The acting is all pantomime, the recitative portion of the play being done by a man who sits above them on a small stage. Then in comes a person dressed in a flowing garment of purple, and wearing a tall cap, beneath which falls long black hair, who sits down behind them. And then follows a long conversation, he gesticulating vehemently, while the naughty little woman continues slowly shaking her head. The royal person behind (judge, father, or mother, we can't make out) listens. And so for some time this goes on. Then again is the little woman seized, tied to a rope by her waist, and hoisted up to the branch of a tree, where, swinging in the air, two men belabour her with a broom and a bamboo. She is lowered down, and again dragged into the middle of the stage; but she is weak, fainting, falls down and dies. The masked man goes swaggering off. Up rises the royal creature, hitherto so cold and calm in manner, and falls prostrate over the corpse in an agony of grief. Suddenly this mysterious person springs up, throws off the purple robe, and appears—a Daimio dressed gorgeously in gold and silk. In comes again the husband (?) a Daimio too, and as gorgeously dressed. They draw their great two-handed swords and fight furiously; then presently with one accord they all run off the stage, including the defunct little woman—an act quite in keeping with the general haziness of the scene we have witnessed. But the amusing thing to watch is the man

who does all the talking for the actors. In front of him is a desk, and the book from which he reads; his face is puckered up in a hideous knot, his body sways to and fro, his whole heart and soul is in the part which he is reading aloud, now the indignant complaint of the husband and now the feeble pipe of the little wife; he cries with his voice and weeps with his eyes; he perspires tremendously, straining his voice, and never looking off his book for an instant.

But I should only weary you if I told you in detail of what we saw and did at Kioto. The Exhibition is held in the Mikado's old palace, and is for young Japan an extremely good one, all the industries of the country being represented from the different provinces—porcelain, bronzes, silk, cloth, lacquer-ware, minerals, &c. The building in which he used to live hidden from his subjects is surrounded by some fine trees and rock-work, over which fall small cascades and shrubbery. Fine temples, situated amid parks, are scattered in the outskirts of the town.

I was unfortunate in missing an interesting spectacle which one of us saw while riding from Kioto to the great lake of Biwa, eight miles away. At one spot, lining the road, a great crowd was assembled. The *betto* (running groom) made signs that some one was going to be beheaded. And presently the party arrived—soldiers, executioner, and the condemned man—and at one blow with a sword this last individual's head was severed from his body.

We spent our evenings in visiting theatres, in one of which fifty geysias were performing together; and also in having private entertainments of the same character in fine tea-houses. The girls were of high rank in their profession, most beautifully dressed, with pretty faces, but stiffened with white powder and red paint. They declared that they had been among the Mikado's most favourite geysias; but these girls were shy and stupid, and not

half so great fun as those more natural maidens whom we met on our Nikkô cruise.

"Wanted a religion," is already the cry of reforming Japan, a cry which will, some people believe, lead to Christianity at no very distant day. The lower classes are Buddhists, and, judging from their manner, sincere Buddhists in their light-hearted way. But as young Japan has contrived without revolutions to upset the old form of government, so she will eventually contrive, no doubt, to upset Buddhism. The government are trying to upset it in favour of Shintô-ism, but there are religious fanatics still in Japan, and a band of them the other day tried to force their way into the Mikado's palace, with intent, it was believed, to kill him. They were all killed on the spot by the guard instead. But this attack has made the government set more cautiously to work. Close to the door of our hotel is a little shrine, shadowed by trees. From here, as we pass late at night, we hear the jang, jangle of the gong, which, placed above, is struck by a cord hanging down. This summons the god; then you hear three claps with the hands, and then a low and rapidly repeated prayer, then the sound of *cash* falling into the box. Impossible to doubt their religious sincerity, when here, late at night and quite alone, they come to pray. But the upper classes in Japan are entirely wanting in religion, or rather the superstitious belief so evident among the lower classes. They laugh at Buddhism and Shintô-ism, and in their respective temples sneer at all the sacred insignia, pooh-pooh the whole thing, show no whispering or light-treading respect for the sanctity of the place, as even we feel inclined to do.

We returned to Osaka by a different route. The first twenty miles we rode, accompanied by running *bettos*, who kept pace with us easily. We went through a fertile tea-growing district, where the land was almost entirely cultivated with the tea-plant, growing in different sizes from large bushes to quite small thick shrubs. Over a

considerable extent of ground these tea-fields were sometimes covered with a roof of matting, to protect the bushes, we supposed, from the sun. The country was, as usual, very pretty. On our right and left were wooded hills, and a river ran swiftly towards Kioto to join the Yodogawa. Numbers of women were working among the tea-bushes, picking the leaves and putting them into large baskets. As we ride by there is a general rush of work-girls to the roadside to stare at us—sure sign, as is the case, that very few foreigners have passed this way before. But the female population is very shy; if we nod and smile, and stop the horses to have a better look at and bid our admirers, *ohio!* they all run away as fast as they can, whereat we burst out laughing, and the *betto*s echo us, and chaff the girls, who redouble their speed.

In the little villages, and outside all the cottages, tea-leaves are laid out on the road to dry; inside the cottages we see heaps of green tea-leaves, and in the tea-houses they give us most excellent tea to drink, and the air everywhere seems redolent of tea. The soil of the land is a bright red colour, and the cottage walls are red-coloured too—plastered with this red soil. In course of time we had to cross the river in a ferry-scow, full of restive horses and bullocks. These boats are, as usual on the shallow rivers of Japan, poled across by a couple of men. On the other side of this river we rode for a while through hilly country covered with trees, and passed a placard stuck up by the roadside stating that no foreigners were allowed to pass further than this; we took no notice, rode on, and presently arrived at a town famous throughout Japan—Nara.

Nara was, ages ago, the Mikado's capital, afterwards transferred to Kioto. It is beautifully situated amid wooded hills, and fringed on one side by a large park, where, among groves and avenues of magnificent old cryptomeria, stand several ancient temples. In one of these temples is the largest of all the colossal bronze

statues of Buddha scattered throughout Japan. On either side sit two wooden, and smaller, figures carved in wood and gilded.

A portion of the park is inclosed by a high wooded railing, in which are kept a number of tame deer, which come to the fence to be fed by pilgrims and others. Deer-worship is carried on evidently here; in another temple is a fine statue, cast in bronze, of a stag, to which the temple is dedicated. The toy-shops in the town are full of little wooden figures of deer standing in a row, and grown-up people are seen walking about with these reminiscences of their visit to Nara. The road to this temple, about a mile in length, leading through the park among the cryptomeria woods, was lined almost the whole distance with great stone lanterns, standing in rows two to five deep, and all looking extremely old. In this temple, too, we saw priestesses, good-looking girls with their hair down, and wearing long scarlet cloaks over white dressing-gowns. We surprised them, I'm sorry to say, skylarking with two young priests in the very middle of the temple!

In the other temple, where sits the colossal figure of Buddha, is another exhibition, for which young Japan has taken a great rage. The exhibited articles here date from the end of the eighth century, and comprise the property of successive Mikados, who stowed their goods away in a wooden building, which has to this day withstood the effects of time and risks of fire and robbery. Every article when it was put into this building was labelled, so the date of almost everything is known; here are old swords, armour, coins, paintings, screens, household utensils, musical instruments, soap, bronzes, lacquered woods, horse equipments, spears, bows and arrows, and figures of Buddha, before which the visitors have thrown their money offerings. I suppose there is no such an assemblage of articles dating back from the eighth century anywhere else in the world.

This colossal bronze Buddha is larger than that one near Yokohama, which every visitor to Japan has seen.

I will give you some of the dimensions of that one: the figure is 50 feet in height, and sits on a bronze pedestal of $4\frac{1}{2}$ feet high. The length of the face is $8\frac{1}{2}$ feet, of the eyes 4 feet, and the circumference of the thumb 4 feet. The execution of that one—intended to rival the Mikado's at Nara—was due to a woman, though the idea was the Shôgun Yoritomo's. "Woman's faith and woman's trust, write the characters in dust;" she, anyway, wrote in characters of more endurable matter, for here sits still *Daibutsu*—the "Great Buddha," whose face, expressive of absolute calmness and dignity, I can well imagine to a pagan mortal must be the face of a god. That figure was once, too, covered by a temple, which was destroyed by an earthquake wave, while the Great Buddha sat on his pedestal immovable. This Nara Buddha is not so fine in face as the other one, and one of his hands is raised in a warning position. Behind him is an immense gilt halo, on whose more prominent rays sit the figures of saints. They are both magnificent specimens of how, so early as the tenth century, the Japanese excelled in the founders' art. Near by this temple is hung one of those enormous bells of which I saw only two or three in Japan. They are struck from outside by a heavy beam of wood, slung like a battering ram. The ringing boom these bells give forth when struck, sounds very solemn and fine.

From Nara we drove in tandem-jinrickishas about fourteen miles to Osaka; night fell long before we arrived, but the paper lanterns held by the men lighted us on our way; and then we dashed full speed into the town, whose streets were crowded and lit by great candles and torches flaring from the shops or over the huckster's stores laid out on the *trottoir*. The manner our "leaders" divided the crowd, as, with elbows stuck out square from the shoulders, they forced their way, shouting "hey! hey! hey!" was very rough, but very effective.

The ship took a short cruise further into the inland sea as far as Miwara, and thence she returned to Yokohama.

And so ends this too-lengthened "peep" into the most charming of all the strange countries which are easily accessible and lie in the ordinary traveller's road. And let me advise all those who wish to travel and find real novelty of scene, combined with comfort and cleanliness, to visit Japan. Other lands there are more utterly strange and romantic, but they lie far outside the ordinary "globe-trotter's" way.

CHAPTER VII.

JAPAN TO VALPARAISO.

THE original plan of our cruise had been to go from Japan to Vancouver's Island, but at the eleventh hour it was given up. I was sorry, for I should have liked to revisit those scenes among which we spent so many pleasant months in the *Zealous*; to have dropped anchor once more in Esquimalt—loveliest of all northern harbours; to have paddled about in an Indian canoe on those quiet sequestered waters, bordered by rocks and fir-woods mingled with oak, and where the calm stillness was broken only by the whistling flight of a "steamer-duck," by a salmon leaping, or the anxious cry of a sea-gull.

I *should* have liked once more to go after the grouse firing snap shots as I flushed them in the bush, or shot them one by one, as they sat side by side on the branches of trees; to have stalked the deer through the forests, or in the depths of the woods—full of squirrels, wrens, blue-jays and woodpeckers—to have caught the greedy little trout in the burns; or in the lakes, fringed with reeds, and straight from whose shores all round sprung a tall dark wall of fir-trees, to have fished for half- and one-pound trout, catching them as fast as the fly was thrown; to have while so fishing, been startled by the splash of a beaver, by the *quack-quack* of a duck as it rose from the reeds and flew upwards to the sky like a rocket.

I *should* have liked once again to visit those lagoons, where from the great flocks of wild-fowl flying overhead,

backwards and forwards, one never knew what kind of duck would fall to our shots ; whether a mallard, pir-tail, canvas-back, teal, harlequin, or a dozen others, of which two guns once, as the morning's work, returned with twenty brace ; to have covered a canoe with green branches and gone paddling slowly, noiselessly, towards the flocks of duck, or grebe, swimming unsuspectingly ahead, and to drift in their very midst before they were aware of our presence ; or, again, paddled by Indians, to have gone gliding down the coast close by the shore, passing great brown and white-headed eagles sitting undisturbed on the topmost branches of fir-trees ; to have landed and peeped over a grassy bank, and beheld, close by, a flock of wild geese—laid low by a discharge of number one shot.

I *should* have liked once more to catch the salmon in salt water, trolling with spoon-bait, spinning minnow, or a fresh herring : catching half a dozen in an afternoon in this the only place the whole world round that I know where salmon are easily caught in the sea, and never (or rarely) in the rivers ; to have gone with the Indians on their canoe-expeditions, spearing salmon and sturgeon, and catching halibut with bait fastened to great wooden hooks ; to have, in Esquimalt harbour again, raked the eulachon (" candle-fish ") up from the sea by sweeping through the dense shoals a long light pole, armed along half its length with small sharp spikes, on each of which a fish may be spitted ; or to have caught whiting, one after another, enough to fill the boat.

What fun it all was ! What a charming life, this roaming through the wild woods in the summer, shooting grouse, and catching fish in the lakes and streams ; this paddling about in the harbour fishing for salmon, and whiting, and eulachon. And in the winter how glorious to find lakes, miles in area, frozen hard, whereon to skate ; and ducks in hundreds to shoot ; and the chance always of seeing a deer, or a puma crouching along some branch of a tree. How glorious to be able to wander through

miles of primæval forest, where no footstep, save possibly an Indian's, has trodden before yours, with no one to say you nay, with gun or rod, in hand, with which to shoot any game you meet, or fish any lake you unexpectedly find!

But all this has nothing to do with the *Challenger's* cruise, so now we will visit a different scene—the Sandwich Islands.

I have not much to write about Honolulu, though I enjoyed immensely the fortnight we stayed there. A snug berth inside a coral reef, and close to the shore; a great variety of as excellent fruit as we have come across anywhere during our cruise, alligator-pears, strawberries, marsh and water melons, figs, small pine-apples, great green oranges, rose apples—a curious fruit, smells like a rose, and tastes just as one would imagine the most sweet-scented rose ought to taste, but doesn't!—delicious bananas and mangoes, the last growing in such profusion this year as to become an unhealthy nuisance, lying rotten under the trees, where pigs are turned on them as scavengers. The fish, too, are peculiarly good, as are all the other eatables which are necessities to you (pampered land-lubbers!) but luxuries to us sailors.

It is a most barren-looking land this isle of Oahu; excepting a wood of tamarind and other tropical trees under which you afterwards discover that most of the town is hidden, a broad green valley opening right behind it, and a green gash to right and left,—the whole extent of view, mountain-range and plain, looks bare of vegetation, and dryly yellow, a scene worthy almost of the South American coast. Even the reef within a few yards of our stern, and dry in many parts at low water, is a dirty brown yellow colour, innocent of those vivid green and violet splashes which one sees elsewhere.

Part of the town might have been transplanted bodily from some American State, the style of the wooden houses being just the same, as are also the streets—extremely

dusty and hot ; but to right and rear of the business centre, one street of which is full of Chinese and their stores, is a scattered town of pretty "frame" houses, looking cool and dim within verandahs smothered with flowering creepers, and surrounded by well-kept lawns and gardens, bright with flowers, conspicuous always the brilliant hibiscus, geraniums, fuchsias, roses, and a host of tropical shrubs, small palms, and large flower-bearing trees.

Here too is a large hotel, luxurious with deep verandah climbed over and festooned by a trailing vine ; a grass plot in front, shaded with tamarind and algaroba, where so many times a week the native band plays well in the late cool evenings, the scene being lit up with flaring oil torches stuck in the ground ; ladies congregating in the verandah, and a picturesque crowd of natives and others on the grass beneath—a pretty and tropical effect.

Pretentious parliament-houses, good hospital, numerous churches, among them a small wooden cathedral with an English bishop, schools, king's palace (a cottage), &c., all situated amid lawns, gardens, and trees. They say that twenty-five years ago there were only three trees in Honolulu ; now the town stands in a veritable botanical garden. Ex-Queen Emma is flourishing, and is seen driving a pony-carriage and pair. A Chinese mandarin is owner of the prettiest garden I saw in the town, it being a perfect basket of roses and other flowers.

I hired a good horse for the time I was here, and as often as possible rode before breakfast in the cool of the early morning. It was quite delightful !—to dash up the valley—often full of rain at that time, though—or out to "Diamond Head," five or six miles and back, to meet the milk-cart and drink a great tinful of milk, then to return on board to a bath, and a fish-and-fruit breakfast ; and by the bye on the way, to a barber, in whose shop I experienced the only rapid cure for a headache I know. I will tell you what that was. In these islands there is a performance, called *Lomi-lomi*, practised on people who are tired, stiff,

dyspeptic, or otherwise unhappy. One goes through much the same process in a Turkish bath, *i.e.* a pummelling, pinching, and rubbing down of all your most tender and sorest muscles, while you lie on the dorsal or ventral side of your body. And this operation—modified—applied to your head, is so delicious, so soothing, that I, for one, could sit there and be *lomi-lomied* for ever. To be *lomi-lomied* is one of the chief attentions a native can offer you; and in olden days the chiefs carried about with them a staff of *lomi-lomiers*.

Behind the town lies a valley, scooped across the mountain chain. It is a pretty valley, contrast with its surroundings perhaps enhancing the beauty; the sides rise from three to four thousand feet, peaked sharply, and draped with bush and trees; silver streaks of water fall down here and there; small ravines hide bathing-pools and falls; tropic-birds soar high up among the lofty peaks—"slides the bird o'er lustrous woodland"; long grass dotted with cattle, and *chapparal* of dense-growing, stunted bush-trees bearing yellow flowers, of which the natives make garlands, clothe its bed. At its narrow head, six miles behind and some thousand feet above the town, you suddenly stand on the brink of a precipice, and a startlingly-beautiful view lies beneath.

To right and left extends a grand precipitous wall—at some parts 2,500 feet high—a wall of red and dark grey rock, buttressed, splashed green with fern and shrub, with trees fringing its base, from which, a thousand feet below us, standing at "the Gap," stretches a broad belt of land, luxuriantly green, to the sea, dashing heavily on to far outlying coral-reefs. This is the windward, the trade-wind side of the island, and looks as fresh and green as the leeward side is barren and dry-looking. The town is not built on this side, because there is no harbour deep enough for anything bigger than schooners, and because the only land communication with the other side must be over this tremendous *pali*, which is bad enough to make people who

do live this side have their necessities sent all the way round from Honolulu by sea. Through this gap in the mighty wall, stretching from one end of the island to the other, comes the life of Honolulu,—the trade-wind; which there condenses into a gale, and flows down the valley, bringing showers of grateful rain, and, when strong, showers of red dust, excruciating to eyes and light grey clothes, and covering the grass and trees, dimming their fresh tints, till washed again by the next rain-shower. I don't know what Honolulu would do without this valley; besides being the trade-wind gate, a burn flowing down it brings them water, and down it come the few showers with which they are blessed. The upper part of the valley is constantly full of rain, causing it to be so green and smiling; and the fag-end of this rain sometimes reaches the town, and you can graduate the rainfall in your garden almost to a nicety by living lower or higher up the valley, villas lining it for some two miles up.

A few miles to the right of Honolulu lies Oahu's Brighton—Waikiki. A very thin grove of gaunt, rheumatic-looking coco-palms, their lean stems much bent and their crowns much dilapidated by the prevailing wind; under the cocos, on a plain of burnt-up grass diversified by marsh, wherein grows a tall reed-grass, is a scattering of cottages and low trees, a native church, a soft sandy beach, blue sea and surf, where bathe the heated Honoluluans, and all overblown by a constant trade-wind from over the hills in rear. I cannot say I thought it a cheerful spot. I attempted one day to ride to the left of the town, but soon gave it up; it made one shudder—a hard white road running over a tract of barren, red, disintegrated lava, scattered over with lava blocks and boulders, and that most ugly and dismal thing, a species of cactus, growing thickly over it.

The road out to Waikiki is pleasanter, and might be made, by means of tree-planting, still more so; while on both sides of Diamond Head—an extinct crater—a mile or two beyond Waikiki are plains glorious to gallop over,

but between them again and the hills are tracts of barren lava, stones, and cacti. On this further plain, close to the shore, is an ancient native cemetery, or, some say, battle-field, and there one can dig up bones and skulls out of the sand enough to stock every museum in Europe. Our naturalists enjoyed life at this spot hugely, returning triumphantly laden with skulls, like Indians from the war-path.

Honolulu's "foreign" inhabitants are a most pleasant people; a "drop-in when you like, and delighted to see you," to which we have long been strangers. For us there was only club life at Yokohama and Hong-Kong; and only in the European settlement at Canton—that green little oasis amidst a howling wilderness of barbarians and odd things—did I meet people "at home;" and in nine cases out of ten this makes all the difference in how one likes a place. So I say again that I like Honolulu, a hospitable, genial spot, where I could have stayed longer with entire satisfaction to myself. But to call it the "Paradise of the Pacific," as enthusiasts do, is just sheer nonsense. Of all Pacific islands that I know, Oahu is least worthy to be called a "Summer Isle of Eden."

Honolulu is a very fine place for invalids with weak chests, and for children; the latter run about barefoot and barelegged, and look with their fair hair and complexions most cool and charming. Every day I rode, by myself or with riding parties of ladies; there were verandahs to sit under in pleasant company far into the night; small late dances up the valley; a royal cottage at Waikiki, and fiercely-contested games of croquet.

With one of these riding parties I went to the other side of the island to see a sugar plantation. We went up the valley, and down the *pali* by a very steep road, roughly paved with stones, everybody getting off to lead their horses down. Honolulu ladies are splendid riders, and what is more, they can saddle, bridle, and mount a horse without assistance. A few miles from the bottom of the

pali, passing over hillocky, grassy country, sprinkled with pandanus-palms, ohia, candle-nut, and guava-scrub, we came to a small sugar plantation. Fine-looking cane, water-power mill, centrifugal wheel—apparently all cheaply and modestly worked; one man—a Chinese—only in the shed, ladling the nasty-looking juice into the wheel, which, revolving rapidly, soon dried it, when it was shovelled out on to a great heap of light yellow, clean-looking sugar. The last sugar mill I saw was in Barbadoes, steam worked and on a large scale. We were hospitably entertained at the owner's small cottage, and rode back again in the evening.

Over this precipice, by the way, the first conquering Kamehameha drove his rival's army, they throwing themselves over in despair, and "their bones lie bleaching beneath." They don't really, I suppose, but so 'tis written somewhere. And the Kamehamehas? They lie buried in a small mausoleum up the valley. What a stranger would mistake for undertakers' plumes, are stuck up without the building, which, surrounded by an iron railing, is led up to by a broad road of the blackest sand. These plumes are made of feathers, stuck into a cylindrical-shaped piece of wickerwork, and are the insignia of chiefs.

It was Saturday, market and gala day in Honolulu, where flock the natives, riding from all parts of the island. Going out we met numbers galloping in, scrambling up the *pali*, and not getting off, as we do, and again in the evening when returning. A very gay and picturesque throng filled the town, everybody being very much garlanded, and dashing about on horseback.

All the native world rides in the Sandwich Islands, the women astride, gracefully and easily. They are a tall, fine race, these Hawaiians, but I cannot admire their women. A few pretty faces one sees, but they usually have a large percentage of white blood in their veins. The elderly women soon become too decidedly *embonpoint* altogether! The feminine garment is a shapeless nightgown, black and

pink appearing the favourite colours, but other bright colours one sees also occasionally. It is not a pretty dress at all ; if not made so full and short, it might be. This surely is not what I imagine the French *sacque* to have been—is not that close-fitting, long, with sweeping train ? Low-crowned, small-brimmed, felt or straw hats (ugly hats, I might add) on the top of a wavy mass of black hair ; feet bare or French-booted ; a garland of flowers hung loosely round their throats, and another round their hats ; large dark eyes ; somewhat coarse nose and lips ; a dark skin ; a striding and scarcely graceful walk, *la voila*, a Hawaiian woman !

The first idea in life of a Kanaka is to do nothing, and to appear always with garlands of flowers round their throats, hats, or around their uncovered heads. Men and women alike are always thus garlanded, from the numerous ladies of the Royal family down to the lowest of their subjects. A common, and I think ugly, one is made from the brilliantly yellow flower of an "everlasting" ; the most gorgeous and striking from the large crimson flowers of the hibiscus ; and perhaps the prettiest from the pale yellow flowers and green leaves of the *hau*. They wear them of all lengths and fashioned from all flowers, and on the whole the general effect is not nearly so pretty as it sounds.

In the outskirts of the town, odd little wooden cabins and grass huts are dotted about among the trees, where many of the natives live, and outside them, as also in streets, you see them sitting in groups eating the national dish, *poi*—mashed taro—which they eat out of calabashes, and all are entirely of opinion that fingers were made before spoons. Poi is rather good, and appears at the hotel breakfast-table.

Taro, 't me tell you, is a species of caladium, grows partially under water, and is the chief support of all Pacific islanders. Young ladies here told me that they never ate potatoes when they could get taro, and in vain I told them 'twas all prejudice and folly.

I must again say that to me there is nothing South-Sea-Islandish about the Sandwich Islands—nothing in the scenery, vegetation, or birds; nothing in the natives, chiefly because, I fancy, they are universally dressed and uglyly dressed—the men in trousers and the women in shapeless sacks. To this dressing is ascribed in great part the rapid decrease of the population—colds and consumption following on intermittent nakedness one moment, on heavy clothing the next. Between the years 1866-72 the decrease of the native and half-caste population was 7,234! I am told that the rate is smaller now, and some people have visions of the scale turning.

The King, attended by numerous ministers, attorney-generals, judges, and other officials, visited the ship, and some of us were presented to him at his palace. Everybody praises him and his Queen. I ought to apologise to Honolulu for having so little to say about it, but its only attractions—society, riding, fruit, and fish—I have written as much about as I well can.

From there we steamed to Hilo, on the island of Hawaii—the most southern and largest of the group. A violent trade-wind right in our teeth delayed us very much, and we did not arrive till the early morning of the third day. Hawaii is a very different looking island from Oahu; gentle slopes of a vivid green surrounding and trending gradually up to the famous volcano of Mauna Loa, nearly 14,000 feet high; bold precipitous cliffs springing abruptly from the sea; numberless cascades falling over them; and in the line of cliffs frequent deep clefts, called gulches, with glistening waterfalls at their heads, and green lawns, huts, and houses near the surf-beaten shore.

We arrived early on a lovely hot morning at Hilo, a large crescent-shaped bay, brilliantly green from the shore and cliffs—against which a heavy white surf breaking—over a gently rising slope of grass and woodland, to near the rugged and purple summit of Mauna Kea, an extinct volcano, some 13,000 feet in height, and away on the left

to Mauna Loa's long, low dome, thirty-five miles distant, and not looking its great height at all. White "stores" along the beach, cottages half hidden among trees, a few tall, unsociable coco-palms, and scattered huts; more in the distance, and higher up the slope, plantations of sugar with attendant mills and tall chimneys. A very beautiful view, but *not*, as some people say, the most beautiful in the Pacific. Rain is almost constant at Hilo, and a rainfall of seventeen feet (occasionally) does not belie that statement.

The same day, M. and I, having got horses and a guide, started for the crater of Kilauea about 2 P.M. A larger party was to follow, but we thought it more judicious to go on our own hook, and as it turned out we were right. Our horses appeared pretty good, with Mexican saddles, and our guide was a good-looking young native, speaking doubtful English. For the first few miles we got along quickly enough, my horse skittish and satisfactory, but M.'s horse soon appeared unable to go any kind of pace between a fast canter and the very slowest of walks; so at least M. imagined, and acted on it, much to our mutual discomfort during the ride, which became a hearse-like procession. We rode over rough grass country to the eastward of the village, sprinkled with small trees, screw-pines and scrub, by a choice of many deeply-ploughed ruts through the grass; and then through a three or four-mile-thick belt of very beautiful wood, where, among a great variety of trees, several different kinds of pandanus-palms grew in wonderful luxuriance and numbers. They, and an undergrowth of magnificent ferns from growths whose tall thick stems and gigantic fronds were worthy (though not generically, I believe) of being called tree-ferns, to small feathery parasitical kinds, which overran their gigantic brethren, and a creeper with tufted pandanus-like leaves with scarlet spikes that coiled round high trees, and their branches, were to me the most novel and characteristic features. I have nowhere else seen a wood like it, and was all the

more delighted with visions that like this the whole road to the crater might be: but it wasn't! We rested for some minutes at its outer edge, under a small clump of neglected cocos by a deserted grass-hut, overrun by a purple convolvulus.

Coco-palms in these islands are "scalliwags"—scarecrows of palms; and the groves, so called, are simply laughable, each tree of which is worthy of having been transplanted from Kew. On over soft-soiled, low-ridged land, where, if we left the track we stumbled over hidden rocks and stones; on through long, coarse grass, bracken, caladium, and guava-shrub; picking our way along the deep ruts which ribbon the grass, mud holes in the hollows, rocks on the ridge-tops, but every bit of the road capable quite evidently of being a hundred times worse if much rain had fallen lately. But we were most fortunate in a clear, beautiful day; and then for miles and miles we rode over an ancient flow of black-brown lava—of a kind called "satin-rock"—gritty, extremely hard, broken in low ledges, piled up in rounded heaps, here petrified in comparatively flat reaches, there rocky and rough, and altogether abominable, yet everywhere, except where worn away on the narrow track, sprinkled with short grass, everywhere undisturbed by signs of life or cultivation; no birds, no insects, a few cindered-looking lizards, and a hot sun glaring fiercely down. Then longer, thicker grass, thin woods of ohia and candle-nut fringed with dead and blistered-looking trunks, and though these trees must have *some* depth of soil beneath them, we still scrambled over a hideous hard path skirting the woods, till we arrived at the "half-way house," about 5.15.

That wretched half-way house! A dirty grass hut, one of three or four near by, built on a grass marsh, plantain and taro patch alongside, guava-bush in rear, mud lurking and oozing under the deceptive green carpet, and a villanous winged creature, half gnat, half weevil, flying about in swarms. Outside, under the projecting roof, are,

a young woman ironing nightgowns, an older woman nursing a naked baby, the master of the hut, and his children. We order a fowl, watch a dog catching it, and in due time eat it, with an accompaniment of horrid coffee, in the hut, which is divided in half by a curtain; in one half is a large four-poster bed, rough table and chairs, and in the other is a thick layer of grass, covered with mats, on which, higgledy-piggledy, the whole family sleep. The chicken was inconceivably tough, as difficult to swallow as the dollar each they charged us for our meal.

It was dark before we jogged on again; M.'s horse more hearse-like than ever, and I had to drop in rear to prevent losing sight of him altogether. Presently a red glow appears among the clouds on our right, increases, and then the clouds, which before have covered it, melt away, and Mauna Loa reveals its long, low line of summit, from the centre of which a great column of lurid light and smoke is flaring grandly up into the now cloudless sky. I had seen it last night in my middle watch, but then it appeared much higher up as it suddenly blazed out between a break among the black clouds which, rolling close over it, were illuminated gorgeously. A fresh breeze was then blowing over the volcano, and two distinct columns of white-red smoke were pouring out amid a blaze of light, and being rapidly swept away to leeward. In the meantime we are slowly walking on, ascending gradually, the track exceedingly rough and rocky, leading through the same sort of country, coarse grass and bracken, but now more scrub and trees. The night is perfectly lovely; no breath of wind, a cloudless sky, an almost full moon overhead bathing all in a white flood of light, and Mauna Loa always ahead, a magnificent sight, flashes of light, which we at first mistook for lightning, reflected on the spreading canopy of smoke floating above the broad flow of light and vapour which ascended straight up in the still night air. I never saw anything finer.

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us, in spite of the beauty of the night, in spite of my sense of the absurdity of being so, I confess that I never felt more tired with the same length of riding-work in my life. Dew fell heavily—soakingly—making one conscious of the chilliness in the air, and our pace was killingly slow. The guide rode silently on in front, upright and lithe, while we were flinging first one leg and then the other over the horse's neck, side-saddle fashion, for relief. It would have been joy to me if I could somehow have managed to damage that guide; he had no idea of distance, none!—and his last "half-mile" was an hour's walk.

But at last, at last, the bush on either side of the road thins—disappears; we ride along a railing inclosing a long stretch of grass, at whose further end is a black object, which the guide points to and says, "Hotel!" Oh joy! A few steps more, and there! On our left lay a vast depression bounded by blackness, not looking very deep, though for a short while we rode close along the edge, so brilliantly was the moon reflected on the glistening lava-bed, and it was only two glowing patches of lurid light and smoke some distance off, and below our level, which made us understand that this must be the famous crater of Kilauea. All round us white vapour is rising from the ground, drifting towards the crater as it steals along the grass. The moonlight is singularly bright and intense, a quite white-frost effect. We ride up to the door, the guide takes away the horses, a chained-up dog barks loudly, and then the landlord appears and shows us into a dark room, where are the remains of a fire, and a clock ticking loudly and showing half-past one! Bed-gear is put on two sofas; silently we undress, feeling guilty at the noise we have made, and in one minute I am asleep.

The Professor's voice wakes me at half-past six—just arrived. His party have been nearly seventeen hours on the road, having started an hour after us and dawdled at the half-way house, and another hut further on, where they appear to have made a number of small girls get

out of bed, dance a *hula-hula* and drink whisky—not much persuasion required about that last item, I understand! They are all nearly dead with fatigue, very loud in their voices, and tiresome generally.

My next waking impression was that of seeing a lady in straw hat and blue "bloomer" costume, with natty leggings and great jingling Mexican spurs, standing in the room preparing to start back for Hilo; the explanation of this apparition in the room being that we were sleeping in the drawing-room, all the sleeping rooms having occupants. And again I went to sleep, hoping I looked as nice as I thought she did. Half-past ten: the last arrivals stretched on the floor, M. on the sofa: time to get up. The bath arrangements we found to be most primitive, forming the only glaring fault in the "Volcano House" establishment. There are no wells or streams up here, but instead, cracks, holes, and fissures in the ground, whence issue clouds of steam; sometimes with steam chokingly redolent of sulphur. Over one of these steam-jets is built a thick roof of grass, which, becoming saturated, condenses the steam, and the water, running down, is collected in tanks below. These grass roofs also catch the rain most effectually. Over the tanks is a wood-boarding and pump, by which you pump the very warm and whisky-coloured water into a tub, and there, in the open air, is your bath. On the other side of the house, some 300 yards down a hill, is a sulphur vapour-bath. A hut is built over the crack, and over the jet of steam is a box with a lid; you get into the box, draw the lid over, a slit being left for your neck and head, and in this horrid contrivance you can either be skinned alive before you are aware of the danger, or else merely steamed into a damp and pulpy condition—according as your bad or good luck may preponderate at the moment. We had an excellent breakfast of beef-steak, fresh milk, butter, bread, treacle, coffee, tea, &c.

The hotel is built in the native style, grass roof and walls over a light wooden frame, no nails being used. A

high roof, low walls, up to which only the partitions dividing the rooms reach, so you can hear a whisper from one end of the house to the other, which it is as well to remember. Four bed-rooms—three beds in each—all opening into the sitting-room; a small dining-room, large sitting-room with open brick fireplace, sofas, swinging chairs, small library, several outhouses for kitchen, native guides, horses, &c. All as comfortable—and unexpectedly so—as a solitary house situated four thousand feet above the sea, on the brink of an always active volcano, on a plain constantly shaken by earthquakes, and most of whose luxuries have to come on mule-back, thirty miles from Hilo, over a rugged lava-track,—could possibly be.

Excepting ourselves and the last arrived party, everybody is down in the crater, where we intend going late in the afternoon, so that we shall see the molten lava-lakes both by daylight and in the dark. In the meantime it is exceedingly pleasant to smoke under the verandah, wherefrom is a view quite unique, and unlike any other I had seen before. The house stands a few yards from the lip of the crater, which—black, Plutonic, with smoke rising from many parts along its six square miles of lava-bed, one thousand feet deep and encircled by lofty precipices—lies before you, while Mauna Loa fills all the right-hand view. It is the most deceptive mountain one ever saw, for it looks as if it would be an easy day's ride over its gently-rising, wooded, and grassy slope to the purpled summit. But in reality that summit is thirty miles away, and our landlord says it would take more than two days to arrive there from here, which quite puts a stop to my once rising hopes. In this thirty miles that we have ridden over on our road here we have ascended four thousand feet, but so gradually that it is only the well-ascertained fact that it is so—confirmed by your pocket barometer—which enables you to believe it. To all intents and purposes the crater of Kilauea—nine miles in circumference—lies in a plain, and the onward sweep of Mauna Loa's slope is a most

gentle rise up to its long fish-backed summit. If this road were fairly good, and not, as it is, the worst thirty-mile stretch of bridle-path imaginable, one could gallop the whole distance, which, indeed, the natives do in their scrambling manner. For a "foreigner," eight hours, including a half-hour's rest at the half-way house, is what the Americans call "good time."

There are visitors' books in this hotel, in which people are requested to write in what condition they find the crater, which changes its form so constantly that an exact and scientific record would be valuable. In these books, visitors who probably never made a joke in their lives before, now think it incumbent on them to begin. But for all that, the books are amusing, and everybody can sympathize with the man whose "one wish is to get at the mouth of the craytur." The complaints about the lack of spirits (not allowed) in the hotel, of heavy rains, and the awful state of the road up, consequent on them, are constant. The number of visitors is considerable, chiefly Americans. About the middle of the day the parties return from the crater, hot, tired, and thirsty, their throats impregnated with sulphurous gases. First came four American officers, belonging to the American flag-ship lying at Hilo; they report it vastly fine, but got nearly choked with sulphurous fumes; then two of our Philos—who started yesterday before M. and I—cooler, and not so "played out." After a good dinner we start down about four o'clock; five of us "Challengers," one crater-guide and his good-looking, jolly, pink-chemised wife, wearing on her bare feet sandals of raw hide, and two Hilo guides employed as water-carriers. Half a dozen steps from the door we are on the edge of the crater, which, just at this spot only, is a steep grass bank resting on a broad lower terrace covered with vegetation. The path leads to the left along this terrace, threading for a while its uneven way among tall grass and fern, flowering ohias, tall heather, and blue or red-berried shrubs, and then dropping down a

precipitous slope, roughly stepped and balustraded. The bit of green terminal wall down which we came soon gives place to a bare precipice.

And so, having descended some 600 feet, we arrive at the bottom, where we step off the soil on to the black bed of lava which lies there just as it has flowed out at different periods from the molten lakes in the southern part of the crater. It is a tumbled, jammed, hummocky sea of hideous blackness—earth's vomit, an ugly name for an ugly subject—lying there in great bouldery masses; in *moutonnée*-shaped mounds; in lumps—smooth, slippery, and shiny as black ice would be; in fan-shaped streams, deeply and closely wrinkled; in flat sheets, disintegrating (as it all is more or less) into small sharp, needly chips, which cut, and run into the naked feet of our guide-girl readily; in hawser-like coils of wire-rope, fathoms long, as if made and laid out by human hands; and everywhere split open and cracked by pressure from beneath. Here and there more recent lava has oozed up and flowed over in rounded streams of black-lead colour, sometimes filling up cracks, or lying on the surface in strange shapes of dragons, birds' heads, roly-poly puddings, &c. And up these cracks—some of which are quite small, while others yawn broadly and deeply—hot air comes blasting with fiery heat, making the soles of our boots very palpably hot, and everything quiver that one looks at.

Several hundred yards from where we stepped on to the lava bed, we have again to descend a little on to the lowest bed of all. About a mile and a half across this the ground rises, forming the back of the cliffs surrounding the inner crater, sunk within which, again, are the lakes. On this slope the character of the lava changes somewhat, a thin, fibrous, ridgy crust covering cracks and hollows—bubbles, I suppose. This crust cracks beneath one, and now and then we broke through, ankle deep, which made us extremely active and jumpily inclined, not lessened as pieces of these fallen-in roofs revealed tolerably deep holes beneath, giving

us a very striking notion of what lay immediately below one; on the whole it is just as well to follow in Indian file exactly in the guide's footsteps, who being of elephantine proportions, makes you feel all the safer. On both sides of us smoke is rising from many places on the slope, but on the line we follow there is nothing that would hurt us if we did fall through—a broken ankle or leg perhaps, nothing fiery.

At the top of the slope we find ourselves on the brink of a low cliff, standing on sharp, broken-up, glazy lava, and beneath us lies what we have come to see, the only place in the world where one can really look on "bottomless pits" of fire—two lakes of molten lava, a large one, close by, and a little on our right, and surrounded by high cliffs; and another to the left, smaller and more distant. In a line with us and the left edge of the small lake, and less than a hundred yards off, is a miniature Vesuvius, just formed and visibly increasing, spouting out liquid lava merrily. A high broad bank of very rough-looking lava separates the two lakes, which sometimes rise and join into one.

And the lakes? not quite what I had expected. I had pictured to myself lakes of visibly molten lava throughout, with torpedo-like fountains springing up here and there, or spouting out from numerous small cones. But to-night, any way, they are not like that. The general surface of the lake is still, of a shiny white-grey colour, cut across by zigzag and curving lines of a vivid pink, and only round the edges—on the shore as it were—was the lava visibly molten and in heavy motion; the forces beneath, seemingly, forcing themselves out only along the sides of the lakes, and there huge fountainous waves of liquid lava were playing, with ever-varying height and strength, surging and dashing high against the cliffs, and breaking in showers of heavy spray.

Imagine a lake four hundred yards long by two hundred broad, sunk within perpendicular cliffs of from forty to a hundred feet high, whose central waters are dead calm and

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of a dark leaden colour, but round whose shores a belt of water forty yards wide is tumbling and surging in great waves against the cliff—waves tumbling, surging, and dashing with such tremendous force that their crests break into spray, rising in showers fifty feet high—waves such as one might see surging into some deep cleft of a bold and cliff-bound shore—waves not rolling, surf-like, on in continuous lines, but broken and rising independently of each other—waves such as we saw rearing against the icebergs.

And then imagine, if you can, this lake of water suddenly transformed into one of molten lava, whose central body is still dead calm, but now veined with crimson lines; imagine the stormy wave-belt surrounding the stagnant central space to be liquid metal, waves of molten lava hurled ceaselessly against the cliffs by an unseen, mysterious power—waves whose crests break as if they were water but whose every drop, clot, and ragged wisp of spray flung fiercely aloft retain their form and white-hot colour, till they fall back with a splash whence they came; imagine this, and then you may have some faint idea of how the lava lakes of Kilauea appeared to us as for the first time we saw them.

When first we arrived the sun was quenching the glare from the volcanic cauldrons, and five or six of these wave-fountains of a dulled crimson colour were separately playing on the opposite side of the lake. Gradually as the sun goes down and sinks behind the high terminal wall of the crater, and "darkness deepens," the glow of the molten lava becomes whiter and more awfully intense; the cliffs illuminated luridly; the smoke—blue-white in the moonlight as it issues from the vents in the slope to windward—all crimsoned as it slowly drifts over; the surface of the lake darker, and the lines which run through it of a fiery red. A wonderfully-fascinating scene to look on! And the volcano became more active; along the whole length of the shore opposite to which we stand these billows of liquid lava were playing furiously, sometimes separating,

leaving dark gaps between them, and then again all uniting, a broad belt of tumbling, heaving, crimson, molten lava ringed the lake all round. It was magnificent! These heaving waves ceaselessly beating violently against lofty cliffs red-hot along all their base—a surf of liquid lava melted in the bowels of the earth, of the indescribably fiery colour of molten metal, flung heavily, tossed lightly about. We cannot see the near edge of the lava lake, but over the cliffs—lower than those opposite us—showers of spray are now and then thrown high, falling circling back, and the side face of a high projecting bluff on our right is all aglow with the glare of fountains playing at the base; while now and then along these crimson lines cutting the dark surface of the lake, which slowly change their shape, clots of lava would leap and fall like big fish jumping out of water, and the crimson liquid well up a little and overflow, as water on a frozen lake would through an ice-crack, soon cooling to the darker colour of the lava on which it rested. You must understand that there was no fire, and very little smoke, simply molten lava in violent agitation flameless, and accompanied by a hissing, swishing, and clashing, a dull throb and rush of escaping gases, which is quite un-ocean-like in its sound, and tells of a liquid far heavier than water. This noise one can hear a long way off.

All this time baby Vesuvius was bursting and playing beautifully; liquid lava came leaping up above the edges, some falling straight back, some flung over and all round its outer slope, pouring and streaming down its pitch-black sides, while a rush of sparks, of lava spray, of red-hot little bombs were thrown high up, spreading geyser-like as they went, falling all round in a shower, spattering the ground, rebounding and rolling away.

It was the very prettiest, most active little volcano imaginable. And the little South lake was, too, in intense activity. There the molten lava was in such tremendous commotion that the faces of the low broken-topped cliffs were always coated with a dripping, streaming cascade of

lava, while quantities were flung clean over. And as we watched we saw the surface of the lake—flecked and furrowed with fiery lines—rise, rise steadily, till at a point opposite us, where the cliff was low, it almost overflowed, and did pour out in a small stream on one side, just the glow and edge of which was visible to us, and then again it sank to its former level. As with the large lake close to us, we saw the spray flung high above the level on the near side of the encircling cliff.

We remained at this one place the whole time, which would not have satisfied me if I had not intended coming again. It was night—moon-lit—before we started back, and when some way across we heard voices shouting on our right, which turned out to be two of our party who had started to go back before we did, and whose guide had wandered out of the unmarked track, and was foggy as to his whereabouts; though nothing alarming would have happened to them, I fancy they were mighty glad—very naturally—to hear our voices. As we cross the hot belt which we had noticed in coming, we see fire gleaming redly through the network of cracks over which we are stepping—not fire either, but red-hot lava—in a solid condition here, though who can tell how near the melting point—sometimes a few inches only from the surface, sometimes much deeper. Below that runs a stream of lava by an underground passage; on another night we saw it break out against a bank and overflow in the north corner (beneath the hotel) on our left. In the daylight we had not seen that the lava was red-hot, though we had very palpably felt the hot air ascending from it, and I think if I had had to come back alone, and for the first time found myself walking on a lava bed, red-hot a few inches only below me, I should have been much inclined to remain quite still, quake, and pray for daylight—would not you?

A stiff scramble up the crater's bank, a regular good "breather!" into the bright cosy sitting-room, where we wash and eat "high tea;" then we smoke, and lounge, and

go to bed—all delightful! The next morning two of our party and the American officers returned to Hilo.

Second Day.—A foggy, Scotch-mistily inclined morning, as is often the case up here. We made use of our horses, which were eating their heads off, by a three hours' ride in the middle of the day. A beautiful tract of country lies to the right of the hotel—which itself stands on a grass plain sprinkled with trees and shrubs—long grass-stretches interspersed with woods, formed of sandal-wood, ohia, candle-nut, and others; or hard sandy soil covered with a small shrub,—the *ohelo*—heavily laden with berries—good to eat, and admirable in tarts, as the old Chinese cook of the establishment proved to us. A few miles brings one to a *ranch*, and a plantation of one species of these splendid ferns, from whose crowns they gather a soft fuzzy material used in these islands for stuffing mattresses, &c., and also exported in considerable quantities to the United States.

We then rode half-way round the crater by a disagreeable road, deep sandy dust alternating with rocks; and it is best not to go off the track—as we did, and found the ground in some parts breaking beneath the horses' feet. From the southern end of the crater a deep crack, running apparently a long distance, is rent in the ground, with clouds of white smoke rising at many places along it. We wanted to get there, but the insecurity of the ground when we tried to make short cuts, and its distance away by the path, prevented us. From a point on the western edge of the crater we got a *coup d'œil* of the lakes, far down below us; this is a good place to come at night, when they look almost more awful and mysterious than they do when one is actually close to them, the noise being plainly audible from this far-off point.

The photographer has been down in the crater all day; he got some fair photographs, but which give one but little notion of what Kilauea is all really like. The best photograph was of a cascade of lava solidified as it fell over a cliff.

At four o'clock I again went down with two of our fellows to see some caves, and the night display in the lakes, which they had only seen in the daytime, which by the way, seems a common mistake on the part of visitors. The night display is of course a hundred times finer than what daylight shows one, the chief beauty of Kilauea being the glare thrown out from the lakes and the intense crimson-white colouring of the molten lava. If I had only seen the lakes in the daytime my impressions of Kilauea would be much duller than they are.

Our guide carried a lamp, and in due course we arrived at a cave, after a mighty rough walk, chiefly along the shelf that forms the edge of the crust which has tumbled in at the centre of the crater. We passed several miniature craters and holes from which steam was rising; a most infernal region altogether there can be no question about that. Very carefully we stepped down to the bottom of a steep slope of loose lava blocks, and there, at the entrance of the cave, we lit our lamp and wandered in. It was different from other caves, inasmuch that it was all lava, and the floor was not composed of mud. The roof and sides were thickly hung with small, black, knobby, lava stalactites, and the floor was thickly coated with knobby excrescences—which may, or may not, have been stalagmites—and sprinkled with small white crystals of selenite. The roof became rapidly lower, and we had to stoop painfully, the heat and vapour more intense and disagreeable, till I was dripping from every hair of my head, from every pore of my skin. We soon had enough of it, and went to our standpoint of yesterday.

The lakes were less active to-night, and baby Vesuvius had put on a black cap, and was at first quite quiet, but soon began to roar at intervals, as gases were invisibly blown up. Just as one of us was taking out a watch to see if these blasts were at regular intervals, it suddenly began to roar most awfully and continuously, as if something dreadful was going to happen, and a white flame

blew out from a glowing hole at one side, as of gas burning as it escaped at some tremendous pressure, and out of this hole, too, it now and then spat viciously. Other small holes in the top-crust showed us that the interior of the cone was red-hot—perhaps the reflection of fires below. But nothing more occurred, much to our disappointment, and it again subsided and roared fitfully.

The South lake appears to have changed its chief scene of activity to the near side of the cauldron, and we could only see the heavy clots as they were flung above the cliff, while a white flame, absent last night, was rushing out from the clins on one side. Beyond the South lake a large extent of lava was aglow with the same white flames—as if coming from cracks—flaring fiercely up, like those of the small cone and South lake.

Returning, we kept more to the right than yesterday, and looked into a hellish blazing hole—a furnace of unknown depth—with a white flame burning fiercely over the open lips. Imagine a small mound on a slope; this mound split broadly across; from the slightly overhanging lips white hot precipices drop sheer down, their depths lost in fierce white light which is painful to look on, and between these precipices falls a cascade of molten lava. How far it falls you cannot see. An infernal row was going on, a hissing, and rumbling, and sharp roar which was most alarming to a novice in volcanoes. One stands slightly below the level of the open lips and can look down at only a foot's distance, and as, when so doing, we were evidently in the line of fissure, it was with a feeling of something very much like relief that I, for one, turned and went away. We passed over a place a short way below this hole, where the lava was at a dull red heat on the actual surface. We got back to the hotel at half-past nine, where we found another party had arrived, the Captain and two other officers, who were all wet through with the drenching rain they had met on the road up.

Third Day.—Heavy rain last night, fog and Scotch mist

this morning. We all had an hour's ride in the middle of the day. I heard the Captain's Hilo guide, a cheeky-mannered native (unintentionally so, I believe), who has provided all our horses and guides, say, "I say, B., what's that Lord's name?" He called everybody by name without the prefix of Mr.; but such a rare chance of mouthing the prefix "Lord" was not to be missed, and I was deluged with it. One of our party he called "*that* old man," much to "that party's" disgust! Early in the afternoon two more "Challengers" arrived, wet through, having started from the ship at 4.30 A.M. in pouring rain. So you see how lucky we were in our ride up. At three o'clock we all went down into the crater, with the intention of walking right round the inner crater containing the lakes; a disagreeable thing to do, for one has to run the gauntlet of the smoke and sulphurous fumes which are driven to leeward (pronounced lou'ard if you *please*).

The wind has always been in the same direction—northerly—since we have been here, and the fog stops short on the northern side of the crater, which is curious enough. We kept more to the left than usual, crossing the slope diagonally, and getting blinded by poisonous sulphurous gases, which also stuck deep down in our throats, half choking us. The character of the lava is extremely crusty—crack, crack, and crunch at every step. Close by on each side smoke and gases are pouring out from cracks and holes. We go as near as we dare, and look into a deep hole, boiling and rumbling fearfully, full of liquid lava in great agitation, a veritable Satanic cauldron; then we pass a "blow-hole"—a small dome of lava, the size of a large bee-hive, which was hissing with a force and noise worthy of I don't know how many locomotive safety-valves condensed into one. There are many of these, some high, some low, some extinct, and some very much alive, as this one.

We enter the inner crater by a break in the wall on the

eastern side, and walk to the edge of the cliffs inclosing the small South lake, a nearly circular pit, across which a good thrower would easily throw a stone, sunk between a wall of irregular height—where we stand perhaps about forty feet. The ground is covered with a fine filamentose lava, called "Pélé's hair"—after the goddess who, native mythology says, lives below the lakes, or somewhere within the mountain of Mauna Loa. It is she who is eternally "madam'd" in these visitors' books at the hotel—until the name of Madame Pélé becomes worse than a nuisance. This filamentose stuff is formed out of the lava, which, tossed aloft, gets caught and spun out by the winds into brown and yellow glass-like threads. Birds' nests have been found made of this, and are to be seen in the museum at Honolulu.

What more can I say of these lakes. The South lake lies beneath—at our feet; a lake the like of which one has never seen before, and, excepting here, will never see again. The central space is quiescent, of a dark steely grey colour, while the edge all round is in heavy motion, swaying and heaving, and of a dull red crimson colour; great shapeless waves rising high, dashing against the cliffs, falling, rising, falling again, endlessly. We stand a yard or two from the brink of the cliff, and the guide shouts at one of us who tries to get closer. But this afternoon the lake is half asleep.

We then walked across the intervening bank with the intention of looking over the North lake in the same manner, passing close to baby Vesuvius, which was quite quiet. But the nature of this said lava-bank was so exceedingly hollow and dangerous feeling and looking that we gave it up, and scaled the low cliff and stood at the old spot. The guide would have gone on, but we were not very anxious (this I mention to correct exaggeration in our feelings). It is the oddest stuff this kind of lava, and what causes these hollows beneath the twisted, contorted, and wavy crust I do not know, unless it is caused

by shrinkage. Last night I saw fire gleaming at one spot on this bank.

This is the least active night of the three in which I have watched the lakes of Halemaumau and Kilauea, but still the North lake is very fine. The molten lava has underworked the base of the cliffs considerably since the first night (or, more probably, the surface of the lake is at a lower level than it was then), a line of glowing caverns into which the lava waves are surging, shooting out wonderful fireworks of spray almost horizontally, while from the overhanging ledges enormous stalactites, looking black against the red-hot background of the caverns, are perpetually forming, washed by the waves and spray, the liquid pouring off their points in crimson streams, making them shake and wave to and fro, and finally fall, instantly to re-form again. The figures of the lines in the lake change rapidly, and the whole central body of the dark lava moves slowly round "against the sun." Though there is rather less activity along the edge to-night, there is more further out towards the centre than on the preceding nights. The black crust begins to bubble and bulge, then suddenly a dome-shaped heap of crimson liquid bursts out and plays splendidly many feet high; in each case when bursting out apart from the edges, it gradually went tumbling and leaping shorewards till it merged into the heaving wave-belt.

Baby Vesuvius was quiet again, only roared and spat slightly now and then. The little South lake hardly showed out at all—on the whole to-night's display has been the poorest I have seen. On our way back we saw the northern corner of the crater all alight, and a good deal of smoke rising; the lava subterranean stream had broken out against "the shelf," and overflowed a portion of the lowest bed. It looked very fine, crimson pools, and streams, and flickering fires covering a large extent of ground. This is immediately beneath the hotel, though from there we can only see the glare.

We have had a most delightful three days' stay up here ; fine weather during the daytime, putting aside a little Scotch mist, and who cares for that ? excellent food, comfortable and, moreover, insectless beds, a cheery wood-fire—very pleasant in the evenings when these fogs are hanging about ; a most obliging host who does everything nearly except cook, a man whom it is a pleasure to ask for your fifth cup of coffee or tea, or for some more hot buttered toast, having already consumed loaves. An antiquated John Chinaman is the cook. As you lounge in a swinging chair before the fire in the sitting-room you can watch the bright glare and smoke rising from the lakes, and now and then see the lava tossed above the cliffs, while on the slope of the inner crater, the flames from *that* hellish hole and those of several others appear like a number of furnaces.

I call Kilauea, without shadow of comparison, the first natural phenomenon the earth can show ; for how is the Mammoth Cave, or the Yosemite Valley, or Niagara, comparable with this hell made visible ? And yet there is one other crater which must be finer than Kilauea—Mauna Loa ; though I fancy there is a vast amount of subjective exaggeration in one description of it, as we "Challengers" do say as one man, that there is in the description of Kilauea in the same book. Mauna Loa subsided after that night on which we rode up ; the next day a little smoke hung over it, and at night a faint glow, and then to all appearance it quite went out. It only burst out three days or so before we arrived, not having been active for many months. The eruption was preceded by some sharp shocks felt at the "Volcano House." They say that when in great activity a lava-fountain, which sometimes reaches a height of 600 feet, plays in a lava-lake. The crater is smaller than this Kilauea branch pipe ; but one cannot get down into Mauna Loa's crater, so what is to be seen must be from a distance of nearly a mile and at a height of some 800 feet.

Fourth Day.—More rain last night, causing small ponds in the grass, wherein we perform our morning's ablutions, with fog and Scotch mist as accompaniment. At eight o'clock we all start back, four of us dashing down to the half-way house as fast as we could, doing it in two hours and a quarter; sixteen miles or so of as execrable a track as one can imagine. The horses are quite extraordinary—how they slip, slither, jump, slide, and scramble, and yet keep their legs! We started many wild duck, every hollow being under water, as was the road, that is to say where no lava rocks cropped up. Two of my horse's shoes were first ground down and then knocked off, and I came into Hilo with horse-shoes hung all about my gay-looking saddle. Two of our horses came down by the run, the riders going over their heads, but got up again unhurt. After the half-way house—where I re-shod my horse, with the natural result that those shoes almost immediately came off; where, also, we ate bad pine-apples, and whose surroundings were dirtier than ever—I took life more quietly, and jogged slowly on to Hilo, partly because my horse would not go faster, and partly because, having so quickly broken the neck of the journey, I was in no hurry. The day turned out lovely and very hot. The road surpassed my expectations as to what it might be under other circumstances than those under which we had ridden up. At the grass hut by the edge of the wood, I discovered a grove of fine green orange-trees, laden with fruit, not quite ripe, but acceptable for all that. I sat there and sucked dozens. About four o'clock I rode into Hilo, never less tired in my life with a thirty-mile ride on bad roads.

We sailed the afternoon of the next day, and in the morning some of us went on shore to try and see a Hawaiian sport—"surf riding." Three bouncing night-gowned damsels whom we met and asked to show us their skill, somewhat misunderstood us, and took us down to a regular bathing place—a high leap from a projecting

platform into a deep narrow creek on the right of the village. However, they looked very nice as—divesting themselves of their outer night-gown raiment and appearing very properly arrayed in pink under ones—their flying figures leaped feet foremost down; and their pink indistinctness far down in the blue water was very pretty and Hawaiian, but not what we wanted. So, accompanied by these now wet and limply-attired nymphs, we went to a populous cottage near by, wherefrom visions of half-dollars made two scantily-clad men take their surf-boards down from the tree against which they were leaning, and sally out into the breakers, which, unfortunately, were not of great size to-day. These surf-boards are some ten feet long, rather broader than a man's body, and pointed at the "bow." Holding these, they half wade, or float, or dive beyond the surf; watch a large wave coming, and just as they feel it, throw themselves on the top of their boards full length on their faces, and come in just in advance of the curling top of the breaker at railway speed, landing on the beach, on which they are thrown high up, having flown lightly over ugly rocks fringing the shore. On these surf-boards they can either kneel, lie, or stand—the last only when the surf is heavy, so we did not see it. This is, *par excellence*, the sport of the Hawaiians, beautiful and exciting to watch, as it must be deliriously exciting to act in.

There is a true story of a native, whose hut, while he was within, was swept out to sea by an earthquake-wave; he wrenched off a plank and came in surf-riding on the top of the return wave, some fifty feet in height, and was thrown uninjured on the land. What a glorious thing to do and survive! A sad fatal accident occurred among the English Transit of Venus party when they were here the other day; they tried this surf-riding on a day when the surf was very heavy, and one of them was drowned. I saw more pretty native women in this village of Hilo than I did at Honolulu.

Of course you know it, but let me remind you that Captain Cook was killed in a bay on the opposite side of this island, less than one hundred years ago.

This Island of Hawaii grows a great deal of sugar, and vast herds of wild and semi-wild cattle, the latter being all owned by somebody and branded. One "run" I heard of was twenty-five miles long by I forget how many broad; a great number of horses are kept for the hunting of the cattle, which are shot or lassoed, at which Hawaiians are experts. The average number of horses gored to death is fifty a year, but horses are absurdly cheap and plentiful here, though fifty years ago there was scarcely one in the whole group, while now every native family has its one to three horses.

Sugar is the first and absorbing interest; it grows well but not with corresponding lucrative results, as the duty into America, which they say (I don't understand why) is their only possible market, is too heavy, and whether Uncle Sam will do something on this head for them is the great question of the hour and minute. There is an endless water-supply around Hilo, the cane being floated down to the mills from the furthest corner of the plantation in the conduits by which the water is led which turns the wheel. While one estate revels in a superabundance of water, the neighbouring one, only a few miles off, is put to the direst straits for the same article, having to condense it from vapour jets, or in divers ways preserve the little moisture with which they are blessed.

Another of these islands "runs" sheep; another has the largest crater in the world, thirty miles in circumference and extinct; another is devoted almost solely to lepers, the scourge of the race, but now, it is hoped, being stamped out under the vigorous administration (in this matter) of King Kalakaua. These lepers are all collected in one island—a large community—where, never more to leave it, they are made as happy and comfortable as possible.

The Hawaiian leprosy takes a most loathsome, malignant

form ; however, one does not see it unless you visit their island, so sharp are the authorities in discovering cases, in spite of the healthy relations and friends of the diseased, who do all in their power to hide them, and though knowing perfectly well that drinking from the same cup and eating from the same plate means catching the disease, yet they will do it. But I will not write of what did not come across my sight.

The cheeky head guide asked permission to come off to the ship ; he said that he and the other guides wanted to sing to the Captain and that Lord ; and they did so, somewhat to our annoyance, while we were at dinner. They sing in chorus and solo, with good voices, chanting in rather a melancholy manner. "Mr. Lord," his fellow-guides called me, "I say, Mr. Lord, want to make you present," and, taking their garlands off their hats, they presented them with great, and rather drunken, respect.

I have told you nothing about our cruise from Japan to Honolulu.

Close off the coast of Japan we found very deep water, which the American ship, the *Tuscarora*, had led us to expect ; 3,950 fms. one day, 3,650 the next, after which the sea shallowed to average depths—between 3,000 and 2,500 fms. With one exception we have never found such deep water since a sounding to the north of St. Thomas (W. Indies) of 3,785 fms. ; and I may mention as a curious coincidence that in both these deep soundings we had the sad occasion to bury one of the ship's company. We had a run of bad luck with the trawling ; the rope carrying away three times running, whereby we lost many thousands of fathoms. But of course there were plenty of successful hauls.

Albatross were our daily and nightly companions up to within a few days of our arrival at Honolulu. Their tameness was extraordinary, and only accountable for in the probable fact that the same birds followed us for many

thousands of miles. We educated them, as it were, to be tame. They are of a small and handsome species, brown plumage, and whitish heads. The albatross in the northern hemisphere are all of different species to those in the southern. During the meal hours they would fly, and keep on flying with wings almost touching the ship's side, alongside, pouncing on the débris as it dropped down the "scuppers." And when we were stationary—sounding, &c.—they swam in flocks of twenty under our stern and round the ship, utterly indifferent to our presence, leaning over the taffrail. Sam was in a state of perpetual excitement, and vastly indignant at the impunity with which they were allowed to swim about right under his nose. We caught just as many as we wished; the men also, who cook and eat them with great gusto. And they are good too, when cooked by a bluejacket, whom I will back against many *chefs* to make strange eatables palatable. It is very good fun catching these birds, and requires a certain amount of skill and practice. They bite greedily, often several fighting at the same time for the baited hook, amid a backward flapping of wings and angry cries. To find out if the same bird followed us, and if so, for how long, we painted one fellow's head with white oil paint, laying it thickly on, and then let it go. It flew straight away, and never reappeared, which, considering the treatment it had undergone, was only natural.

One day an albatross appeared with something white flying away from its leg; and as it refused to be caught we shot it, thinking to find some testimony where and when it had been caught before. It was a piece of a lady's handkerchief! quite a pretty thought, was not it? but it had no mark of any kind upon it. How did we know it was a lady's handkerchief, ask you? As if we sailors did not know a lady's handkerchief, forsooth! Though sometimes very few albatross were to be seen in the morning, there were always plenty at noon when the ship's company dined. These albatross, on almost calm days, are constantly settling

on the water; often ahead of the ship and remaining there quietly as she sails close past them.

We caught, as usual, numbers of sharks, opportunities for which we get so often in this ship while we are at our work. Some of our officers are inveterate shark catchers. The brutes! how we bully them, and how nobody has any compassion! It is a curious fact that we always catch the same species of shark at sea all the world round; only once, near Japan, we caught a "blue shark." Pink-tailed tropic-birds often appeared, crying shrilly high in the air, and, more rarely, frigate-birds soared quietly overhead. On some days the surface of the sea was covered with small ball-like lumps, formed of barnacles all growing on sea-weed bubbles.

While we were at Honolulu, H.M.S. *Petrel* arrived, last from the Galapagos Islands. She had been sent there on her way from Panama to make what collection she could of the fauna for the British Museum. A lichen grows on the islands of the group, from which a valuable dye is made, and the men who are sent to collect it live, as do in great part the older colonists, on tortoise flesh, these tortoises being of colossal size and remarkable in every way. This universal onslaught is causing their destruction, and doubtless before long will lead to their total extinction. So before that event happens, a man-of-war on her way from Panama to Honolulu was ordered to call there and collect as many specimens as possible of everything they came across. They appear to have done the work well, quite entering into the scientific spirit of the age. Indeed, her decks (she is a small vessel) present an appearance in the way of science-reptilean that quite cuts out the scientific ship of the day lying alongside of her. And I cannot say I regret that fact. The *Petrel's* decks are crowded with large and small tortoises, and some of the cabins are lined with bottles, in which, reposing in spirits, are lizards of all sizes. When in Honolulu harbour the largest of the tortoises died, and we contributed tin cases and gallons of

spirits to preserve it for a curious public at home. We took charge of two others, a tolerably large one and a smaller one. They may, in one sense, be called very tame seemingly knowing the time of meal-hours in the Captain's cabin, where a most ridiculous procession may sometimes be seen wending its way.

First goes dog Sam, wagging his tail and smiling as only Sam can smile; next follows with waddling straddling gait the largest of the tortoises, and following it the small one, while the rear of the procession is brought up by the servant, dish in hand, who, the gangway being narrow, cannot pass, and anathematizes the obstructions warmly.

The "Petrels" had a great job in getting the tortoises down to the shore. They are found sometimes a long way inland, and as they are not to be driven, they must e'en be carried down. These we have on board will eat anything and everything. The largest one, if you stand on his back, will walk away with you, but is not strong enough to lift its shell off the deck, so it is more of a drag than a lift. Scratch its shell and it will bleed, put your finger in its mouth and it will bite severely; its outstretched neck is long and skinny, its head dull-looking and serpentine, and altogether it is the sort of brute you might, in a nightmare, find walking over your chest.

Perhaps you would like to be told something about our sounding and dredging work, but I must leave that to a scientific pen. Our work in that way is to us naval men, who have to work the subject practically, exceedingly wearisome; so wearisome that we become unreasonable, chafe at the inevitable delays, and look longingly forward to our release. On an average we sound something like every 200 miles, and as this comfortable old tub does not average more than 100 miles a day, so we stop every other day. Sometimes we trawl every time we sound sometimes we skip one trawling. Sounding, taking serial temperatures to 1,500 fms., at every ten up to 200, then only at every 100, getting specimens of water at inter-

mediate depths, &c., takes about seven or eight hours; when we trawl in addition, from eleven to thirteen hours; and all this time I beg you to remember that perhaps a fresh breeze is blowing, which if we could only pursue our voyage in peace and quietness, would waft us towards the shores of Tahiti, a distance of seventy miles or so.

And it is no good arguing that this work is our *raison d'être*; we know that too well, and obey the law of our being to perfection. But we should be more than mortal if after more than two years of the "same old grind" we did not—but bah! why growl? A splendid ship, a splendid cruise, romance, "how interesting!" &c., &c.—by all means, be it so. Has not Huxley said that our work in the Atlantic alone more than repaid all the bother and expense of outfit? How fervently did we agree with him, and wished that the authorities had thought so too, and ordered us home to do no more! But is not it a consolation that a brilliant band of *savans* throughout the world is dogging our wake with the keenest excitement and interest? Of course it is, and if I, for one, can forget the sea-work in the pleasure that seeing new, unstereotyped and savage countries has afforded me—as fortunately I can—well, why again, why growl? So, hey for the *Challenger*, and may we soon see the last of her!

"Taking up my pen," to write a word or two about Tahiti, days after we have left it, I feel as if trying to remember a dream; a delightful and by no means a forgotten dream, but a very undescrivable one. And in this dream of Tahiti is mingled the other South Sea Islands we have seen, the Friendly and Fiji. For, hitherto, there has always been one more to look forward to, one more true "Summer Isle of Eden lying in dark purple spheres of sea." But, now—*heu fugaces*!—they are a memory, a thing of the past. But, on the other hand, and let me hasten to say it, do you think that I would willingly for more than a month or so, sit me down upon these yellow shores and say I shall return no more? No! and it is well to remember

that I tire of these voluptuous isles of the South sea ; that to me half their charm has been that of first acquaintance total novelty, and a brief stay. Though I have enjoyed these and many other lands—particularly the Moluccas, Arru, and Ké Islands—more than I can say, still, I can very well recognise the fact that a second visit *might* dim the *couleur de rose* which now flushes my memory and imagination. Our long cruises at sea (of which you hear nothing—you only hear of the sunny side of naval existence) give us plenty of time to look back on our cruise, and as I do so now—approaching the end as we are, with nothing very pleasant in the remainder to look forward to—and try to think what I have enjoyed most, I find I cannot come to any conclusion. One moment I think I am happiest when, with a gun in my hand and murder in my heart, stalking rare or beautiful birds whether toucans in Brazil, rifle-birds at otherwise odious Cape York, or paradise-birds at Arru. What changes we have seen in bird-life, and how you would have liked to have seen the same!

First, the toucans, wary and difficult to get at among the tall woods of Brazil ; there, also the humming-birds, swarming as numerous as bees might be among the foliage of flower-laden trees ; then the pretty and gentle “molly-mawks,” flirting and kissing beneath the stunted trees on Nightingale Island, or the great “wandering albatross,” nesting on and dotting like sheep the desolate uplands of Kerguelen and Marion Islands ; and on their rocky shores, or buried among high tussock grass, the beastly—yes, beastly—penguins with their deafening screams, and horrible, horrible smell ; next, in the Fiji group, the parrots and lorries ; at Cape York, the rifle-birds, lorriquets, and brush-turkeys ; at Arru, the paradise-birds—the little scarlet king-bird, creeping among the branches in dark, damp woods, whistling wheezily and long, and the great emerald-bird, in undress, 'tis true, with its harsh *Wauk ! Wauk !*—lorriquets among the casuarina, red and

green parrots rocketing through the lower greenery, black and white cockatoos shrieking raspily high up on the tops of trees; at Ké Island and in the Moluccas the splendid nutmeg-pigeons, and flocks of scarlet and green lorriquets flashing among the fruit-trees around the settlements. And then I remember with affection the sociable life of Canada, of the Cape, of Australia, and of New Zealand; and then I think of the exciting discomfort and magnificent iceberg scenery in the Antarctic; and then of enchanting Japan; and then of those novel and curious lands, the Admiralty Islands and New Guinea, where as by enchantment we dropped upon the "naked savage" in all his pristine glory and disagreeableness.

They were really a strange and most fiendish sight those four hundred savages, naked as on the day they were born; their faces smothered with black and red paint, the curving boars' tusks stuck in their noses and gleaming whitely up to the temples; their great mops of reddish dyed frizzled hair bedecked with feathers and crimson flowers; their solemn, deep, and long-drawn war-cry pealing over the water; the rapidly paddled flotilla of a hundred canoes, full of bows and long, ugly jagged arrows, which in an instant were bent and aimed at the least alarm—it all reminded us of something we had heard, but never before realised in its devilish reality. And then I think of these delicious days among the islands of Polynesia—notably in Tongatabu, in Kandavu, and in Tahiti—of which last by-the-bye I must say something now.

At daylight on the morning of Sept. the 18th we saw the high islands of Eimeo and Tahiti ahead, and soon after passed Tetuaroa, a cluster of low islets lying thirty miles to the northward of Tahiti, and where in olden days the gay world of Tahiti retired to recruit from their dissipated life; and in the evening, having steamed over a glass-like sea, we anchored in the chief harbour of far-famed Tahiti, the gem, the queen, the paradise of the Pacific the South Sea Capua, La Nouvelle Cythère (a few

only of the names that have been lavished on it), a place preferred by the mutineers of the *Bounty* to her decks and the strains of sweet Captain Bligh—and no wonder!

So much has been written and said about Tahiti since the days of Captain Cook to the present, in which “the Earl and the Doctor” have last published their very enthusiastic and pleasant recollections, that it seems folly to add my mite. But, as usual, my hope is that you may have forgotten all you have read about it; and after all what I saw and did has nothing to do (as long as I do not crib from books) with what anybody else saw or did, has it? With Tahiti’s much-vaunted scenery my first impression was disappointment. Though Levuka’s mountains are on a far smaller scale, and with a more disfiguring village on its shores than is Papeete, yet I was as much struck with Levuka as with Tahiti; and Kandavu, too, with its mountains and island flooded densely with forest vegetation is as beautiful. That exquisite island, part-forming the harbour there! With its luxuriant tropical woods, its village and kindly natives, its parrots and lories. Those idyllic spots on the shore where among the waving branches of the cocos the little lories flew, or sat side by side, chattering and making love; where the sea came rippling up on the coral sand, alive with small shells of all sorts and shapes, from buckles to trumpets, each tenanted by a hermit crab; where the gaudy parrots shrieked, and the pigeons boomed a low note among the huge buttressed trees; where the little swallows swept in and out from the curtain of foliage overhanging the water, and butterflies hovered among the blossom; and where, last but not least of the pleasures, the breeze drove back the musquitos.

But to the Moluccas (as seen from the ship), to Banda and Ternaté in particular, I would give the palm for general beauty of scenery, and it is only when the natives are in question that the South Sea Islands carry everything triumphantly before them. Theirs is the apple without doubt. There is a charm and romance about these South

Sea Islanders which you dwellers in squalid, torpid old Europe cannot the least comprehend or imagine. Now don't! let me dream my dream as I saw it, and bother me not with mosquito-like, Grundy-like recollections of what I have heard and read: their licentiousness, their caprice their *wicked* laziness, their deceit, their childishness, &c. All this I was told of, and perhaps saw a *soupçon* of some and something more than a *soupçon* of others, and this only will I say, that of the first item I saw what I consider remarkably little. But what this charm and romance is, is on paper rather inexplicable. It lies I suppose in their universal fatness, in their lounging ways among the huts under the food-fruit trees—the cocos, bananas, bread-fruit, oranges, and mangoes; in their *bonhomie*, their good looks, and stalwart forms, their colour, their dress, or undress, as the case may be, their pleasant languid manners, in their soft and bubbling language. I found, too, a considerable amount of charm and romance in the Japanese, but never among negroes, or Maoris, or Chinooks, or Australian blacks, or the savages of Api, of Papua, of the Admiralty Islands; nor yet among the Malays, for though a picturesque race in their dress, their women are usually hidden away, and what charm can there be in a people without their aid? But, once again, let us return to Tahiti.

The peculiarity of Tahiti's mountain scenery, as seen from the anchorage, is the small, sharp, angular ridges which everywhere tumble down the slopes, and the knife-edged summit of a magnificent green precipice, which, abruptly splitting the highest ridge in our view, drops sheer down into a deep ravine whose mouth opens seawards, a mile or so to the left of Papeete. The walls of this gorge, the clefts of the highest ridges, and a deep hollow on the right of the village, are clothed with a dark green tree-vegetation; but the general vegetation looks scrub-like and yellowish, scarred here and there a bright red where the soil is exposed.

But Tahiti disappointing? No, I must half change my mind already; for that same evening on which we arrived there was a sunset, and bathed in its light—one of the most lovely effects of sunset-colouring on land and sea I have ever seen—I shall ever remember Tahiti. How the sun setting behind Eimeo in a brilliant soft saffron sky, splashed with small golden and mauve-coloured clouds, threw boldly forward in a clear-cut, opaque purple mass, that fantastically pinnacled island, near the summit of whose highest peak there glittered, star-like, a speck of light—the sky seen through a hole pierced in the mountain; how in the sea, smooth as a mirror within the reef and here and there to seaward blue-ruffled by a cat's-paw away to the horizon was reflected the saffron hue from above; how against purple Eimeo a cocc-crowned islet in the harbour appeared dark olive green—a gem set in the yellow water; how the sunlight left the vivid green shore of palm-fringed Tahiti, and stole upward till only the highest ridges and precipice were illuminated with strange pink and violet tints springing straight from mysterious depths of dark blue shadow; how from the loftiest crag there floated a long streamer cloud—the “cloud-banner” of Tyndall; then how as the sun sank lower and lower the saffron of the sky paled to the turquoise blue of a brief tropical twilight, the cloud-banner melted and vanished, and the whole colouring deepened and went out in the sudden darkness of a moonless night! Who could describe it? Not I for one.

And hurrah! at last we have come to a gracefully clothed population. Granted that clothing is one of the “oughts” of civilized life in the South Seas, undoubtedly the natives here have found the way how prettily to “ought.” But, still, to the accustomed eye, the Fijian and Tongan, dressed only in a kilt of green pandanus leaves, or of tappa, look as much dressed, as much “proper” every whit, as do these Tahitians here. It is the same style of dress as that which I did not like in the Sandwich Islands,

but the *vahine* Tahitian wears her gown generally longer, less full, and they are "all round" remarkably more graceful in appearance, more pretty in face and feature, than their Hawaiian cousins, who, now that I have seen Tahiti, seem to me more unlike the ideal South Sea Islander than ever. So changed is the native population of Tahiti that now one could never recognize them as described by Ellis the missionary—their dress and manners are so much altered. Coming from the Sandwich Islands this does not appear so striking as it would if we had come straight from Tongatabu, which is still very primitive and very much more my ideal South Sea Island. The natives here are like, and yet quite unlike, the Tongans, who impress one very differently with their curly hair stained yellow, their much lighter colour and comparative undress; for there you can see them dressed in their native cloth, made from the inner bark of trees, just as they were in the olden days of heathenism, cannibalism, infanticide, &c.; and in manner, too, they are more as they should be, more demonstrative and inquisitive, more can't-help-smiling-at-you, and open. In Tahiti they are somewhat dull and reserved in their manner; few salute you with "*Yarra-na*" unless you first give the word; few, as you stroll about, ask you into their houses. Here I never thought of looking into a native house, sure of an eager welcome as one would be at Tonga; here one never sees a wild-looking, half nude girl rushing out of a hut to stare; no groups of women beating out tappa, or laying it out on the grass in the sun; no feeling that all the world is charmed to see you, and that you are as interesting to them as they are to you; in short, all less primitive and natural.

And this is because, long accustomed to a considerable European occupation, we are so very civilized in Tahiti; not the dreamy, sleepy civilization of a most correct and Christian king, and of missionaries, as at Tonga, but the civilization of a considerable trade in coco-nut oil, cotton, pearls, pearl-shell, and cloth; the civilization of grog-shops

and other necessities for European wants,—French soldiers and sailors, &c. I had no conception that the French made themselves such masters of the place as they do. Protectorate? my conscience, it is simply a “crown colony of a very severe type,” and governed by the Governor with a mighty high hand.

The whole history of the manner in which the French came to occupy this island is irritable and lamentable. Although we may have occupied countries in a high-handed manner as regards the natives, still we invariably have something to show for it besides the mere advantages of a naval station, whereas here the French have nothing to show worthy the name of a European power, and this not because they don't try, but because they do try and fail, which, in two words, is the history of all their colonial attempts. There is no liberty of conscience, no doing anything in Tahiti without the feeling that you are being watched. And when I say that this restraint on the freedom of the subject extends from the French and English Protestant missionaries, who before being allowed to preach in a church and district not their own have humbly to ask permission of the Roman Catholic authorities, down to your humble servant, who, having got up a native dance to which all the world was coming, was then informed by the Government that they could not allow it in *that* district, &c., &c., I have surely stated the alpha and omega of French colonial government absurdity. It is the universal complaint that a Frenchman may do as he likes in Tahiti, but a stranger, oh no, sit on him! In three notable and ridiculous instances the Government showed unconcealed jealousy and alarm in our intercourse with the native population. But let us forget, if we can, that Tahiti is enslaved by *Liberté, Égalité, Fraternité*. When I think of that my dream becomes a nightmare.

The day after our arrival was Sunday, and it was a queer mixture we saw walking along the street facing the sea that morning: French priests in their black robes, French

soldiers and sailors, Chinese, and gaily dressed natives of both sexes, the women sweeping along in their *sacques* of bright pink, or green, or white:—very pleasing they looked, and you may be sure occupied the "field" of our glasses a good deal that morning;—and on board a large French transport which has brought out a relief of troops—dropping a batch of convicts at New Caledonia on her way—high mass was being celebrated on her upper deck.

The village of Papeete, the capital of Tahiti, is laid out with some regularity as to its streets, but not with much as to the shanties and cottages which border them. These are all wooden, and with the exception of some of the business houses, one-floored. There are several large dry goods and provision stores, and a great many grog-shops; and behind the "Rue de Commerce," facing the sea where the former are to be found—the latter being judiciously distributed in this and in other streets—there is a scattering of cottages surrounded by grass plots, trees, flowers, palms, and palings. These alleys and roads are pleasantly shaded, but there is an unswept untidiness everywhere, an unkempt appearance both in the streets and round the dwellings which is very—French, I was going to say, but very un-Dutch-like is more what I mean. A few pretty gardens one sees here and there; in other parts of the village everybody seems to have pitched their dwellings on the grass where they wished; and it is not until you get out of this nucleus altogether, that one comes across the old style of native house, which, scattered under fine groves of bread-fruit trees, or hidden among the profuse sub-tropical vegetation, do not always look tidy or clean. But the natives do not seem much biassed in favour of their birdcage-looking huts, for around Papeete, at all events, they live as much in little wooden cabins. From the second road, parallel to the shore, one enters the royal grounds, a white fenced grass inclosure, in one corner a thick clump of cocos, and at the further end a cottage,

long and low. Close to it is a new stone "palace" that they have been building for years, not yet finished, and never likely to be. It is square, two-storied, and ugly in the extreme. Next door is the Governor's house, a nice one in a garden; and then we come to the Government offices, where, stuck on the stems of trees outside, we can study the "*loi sur l'ivresse*," &c., then barracks, hotels, shanties, &c. Close in rear rise the flanks of the mountains.

The only travelling road in Tahiti is that which threads the belt of land lying between the sea and the foot of the bold-rising hills, and it is on this fringing of alluvial soil that the whole population dwells. It is one of the strangest formed islands I know; a mountain mass split down in all directions with deep ravines, whose sides form tremendous precipices, terminating in knife-edged ridges and "ass-eared" pinnacles. They say no man has ever ascended the highest peak, which, nearly 7,000 feet high, is absolutely inaccessible. But by following up some of these wonderful ravines, by creeping along narrow ledges in the face of precipices, by dropping from ledge to ledge by means of ropes, and by taking natives to cut and clear away the bush, under which to creep, you can get across the island in a manner. These accessible ways across the face of bush-clad precipices, along the tops of ridges so sharp in their angles that one can literally bestride them, have been discovered by the natives in search of the wild plantain, which grows luxuriantly high up among these mountains. At the heads of these ravines, in olden days, they built their strongholds, and there the defeated chiefs and their followers retired after their constant fighting.

W. and I made a delightful carriage excursion to the village of Papeuriri, thirty-five miles away from Papeete. We were given a letter to the native chief of the district, which bade him give us food, lodgment for the night, and also a *hymnene* (native singing). For the two first items he would be remunerated. We started early in the morning; a light trap, two horses, a young native driver, perfect

weather, exhilaration generally ; and away we drove along the coast of lovely Tahiti, by a good road leading through entrancing scenery, and vegetation of unrivalled luxuriance. Here grow to perfection the bread-fruit, banana, and coco, and mingled among these are oranges, mangoes, citrons, limes, papayas—which have the property, 'tis said, of making tough meat tender if hung among the leaves—pandanus-palms, cocoa, coffee, banyan, candle-nut, chestnut, and hibiscus trees, bearing a large yellow flower, and a number of others, all in flower or fruit, or both ; a Garden of Eden truly, and where one can eat almost of every tree. Even the scrub here is a rich fruit, the guava ; an irrepressible nuisance which, once introduced, spreads thistle-like up mountain-sides, and in every neglected spot. It is the rabbit of vegetation here.

Beneath the shadow of these fruit-trees lie here and there the native houses on a carpeting of bright green grass, tall bushes of pink oleander, of crimson hibiscus, of roses, and other flowers beside them, and spots where pine-apples, yams, and taro are cultivated. Pine-apples grow like weeds, but are small and poor-flavoured. The bread-fruit grows here—in its home—to a great size, and one particularly pretty Tahitian village we passed, where a smooth greensward was shaded entirely by these splendidly leaved trees, and dotted over with large, well-built native houses. These are oblong-shaped, built on a raised flooring of coral blocks, the walls formed of thin white poles, placed about an inch apart, and the roofs thickly thatched with the leaves of the pandanus-palm, in exactly the same fashion as the Philippine islanders and Malays thatch theirs, only they use the areca-palm leaves. They look very cool, these native houses, and must be so, all open to the air, but curtains, made from matting or cloth, are hung inside and can be let fall when wanted.

In the garden of one cottage that we passed, belonging to a European, we saw two huge tortoises looking very dry and out of place, though doubtless much better off than

in their native islands—the Galapagos. They were certainly larger than any the *Petrel* had, so one may suppose that their lazy and comfortable life in Tahiti agreed with them.

Never having seen a cotton-plantation before the other day in Fiji, it only dawned on me gradually that this tall plant, growing thickly, looking scrub-like and quite uncultivated, must be cotton. But so it was, growing in considerable quantities, flecked with yellow flower, and the white fluff bursting from the pods. And in contrast with these uncared-for-looking cotton-plantations, we passed others of vanilla, cultivated with a neatness and care worthy of the Japanese.

Among the plantations of vanilla and cotton are shanties, from which a pale-faced anatomy of a Chinaman looks out, or is seen outside spreading cotton to dry in the sun, or picking it off the bushes; and sitting in the door-way is his native wife. It is chiefly on account of these wives that the natives find John Chinaman a convenience to them. Wretched, small, bandy-legged, washed-out creatures they look, these yellow men, alongside the splendid brown animals, the Kanakas. The lowest of the coolie class, I should say these Chinese are here, who also keep small shops, grog and otherwise, in Papeete, and it is he—industrious John!—who as usual cultivates the vegetable gardens, and sends the price of a cabbage up seventy per cent. when a foreign man-of-war comes in. We saw a number of Hervey islanders employed in making a taro bed, which requires a good deal of labour, the bed having to be puddled to keep in water. They struck me as being very like in face, though larger in physique, the Api islanders whom we restored to their home. Further on we passed their village, a group of small huts raised on piles, with walls made of mats. These men are imported as labourers, as the Kanaka will not work if he can help it.

About half way on our journey we stopped at a kind of inn, kept by a Frenchman, and his very pretty half-caste

wife. Here our horses were changed, while we had a long talk with the Frenchman, who gave a sufficiently damning account of how trade, under recent administration, was going to the dogs; and of this we saw some evidence further on. We drive on, through always the same beautiful scenery. Close on our left are the green mountains, ever changing to some new form of picturesque beauty; their flanks pierced by deep ravines, broad at the mouth and narrowing, as, penetrating to the very heart of the mountains, they abruptly terminate in lofty pinnacles, crags, and precipices. And the marvellous lights and shadows which play on the dense and varied vegetation, filling their beds and draping the precipices which rise cloud-high! How tenderly blue the shadows and vividly green the lights! Down these ravines come streams and rivers which, crossed by small bridges, are much enlivened with natives washing their clothes or themselves. On our right is the sea, smooth as a mirror within the reef, revealing the coral patches beneath in splashes of brown and green; while outside the reef, encircling the island at some distance from the shore, and on which great rollers are beating, a brisk trade-wind is whitening a deep blue sea.

As we continue our way round circular-shaped Tahiti, the Island of Eimeo disappears behind us, and the high south-west peninsula appears ahead, separated from this portion of the island by a broad, low neck of land. Long shallow bays indent the coast, the projecting points being usually planted with coco-groves. A coco-plantation so thinly planted as to admit the sunlight beneath on a carpeting of grass is pretty, and pleasant to walk under, but when planted, as some are, so thickly that no sunlight can trickle through, then the ground beneath is bare, covered with dead and rotten branches, and pitted at every inch with the holes of large land-crabs, exactly the colour of the soil they burrow in, and sometimes so numerous that the whole ground appears to be moving off as they

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And now we drive through a long avenue of plantains, on each side of which—to the sea on one hand, to the hills on the other—the woods are cleared away, cotton and scrub taking their place. It is fashionable in Tahiti for your house to be approached by an avenue of plantains; a great mistake, for in exposed positions the enormous leaves are frittered into shreds by the wind, and look anything but pretty. This large cotton-plantation was only the other day to all appearance flourishing; carefully and luxuriantly kept up by the English manager, who sumptuously entertained all strangers visiting Tahiti. But he died a short time ago, and the estate was declared bankrupt, in which state it remains, and would seem likely to remain so, an absurd upset price being put upon it by the French authorities. A group of large wooden houses, forming a little town of themselves, are all deserted and falling to pieces; in one used to live the hospitable manager of the estate, and in the others lived hundreds of labourers—Chinese and Hervey islanders; while the plantation around, covering a large extent of prolific land, is utterly neglected, scrub and guava mingling with the flourishing and wild-looking cotton. It is the most melancholy sight I saw in Tahiti; so let us drive on, again through the coco, bread-fruit, orange and mango groves, until the huts, becoming somewhat more visible and grouped, betoken a village, Papeuriri.

We stop opposite a small cottage, some thirty yards back from the road, when the driver goes in and delivers our letter. Presently a great burly native comes out, shakes hands and invites us in with great cordiality; then his wife enters, a dark-skinned, very good-looking woman. Neither of them understands one word of English or French, and we as much of Tahitian language, but that does not much matter. While Madame clears away the

table, we sit in the verandah and smoke, soon joined by several more natives, evidently swells of the village, who all shake hands with us, and then we have a grand talk by means of one who interprets, he having visited Sydney in an English whaler. More men arrive, then women and children, and so, tired of being stared at, we went for a stroll. While W. sketched under the shade of bananas, and got tormented with musquitos, I watched the small burrowing crabs which have their habitations on the shore. These are of a kind called "calling-crabs," and of all things crabby, are the most eccentric. They are small and dark-coloured, with the exception of one of the fore claws, which is coloured bright pink, and equals in size the whole remainder of the creature. They live in little holes, at whose mouths they watch, the large claw being constantly kept in what appears to be aimless motion up and down; and from which beckoning gestures they derive their name.

As we walked back to Teré's house we saw a number of natives, men, women, and children, sitting on the grass in front, under the trees. In the verandah was Teré, the chief, and three other men—sub-chiefs and his assistants in the government of the district. We sat down on the grass among the natives and looked on. When first we arrived, Teré was reading aloud out of a large book to the audience, who were perfectly at their ease, gathered in groups, some chattering and laughing, others in eager conversation. When he had finished, one of the crowd stood up, and delivered an extemporaneous speech to the "cabinet" on the verandah, with perfect fluency of speech and graceful gesture; he was answered by one of the sub-chiefs, who made a long harangue without one "ahem" from beginning to end.

Children were running about among the assembly, skylarking, noisy, and quite unrepressed: fowls strutted about, and an occasional pig wandered absently through, got spanked for his temerity, and ran squeaking away.

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Some of the speakers were attentively listened to by every one, and "a point" greeted with low approving exclamations, or a short hearty laugh. There was an old chap who was evidently a wag, for his remarks were much laughed at, and the approving hum which ran through the assembly showed his popularity. Sometimes there was a lengthened pause in the proceedings, and then one of a group slowly rose and delivered his thoughts aloud. They have a natural talent for public speaking, these Tahitians, and certainly more finished sounding oratory, or more eloquent gestures of arms and hands, I never saw anywhere. After somewhat more than an hour's palaver the assembly dispersed; it was a most pleasant and picturesque picture of Tahitian native life.

Between Teré's wooden cottage and the road is a lawn, planted with mango, tamarind, bread-fruit, and coco-palms, while all round are groves of the same, and of splendid great orange-trees and bananas. I thought I had seen a large orange-tree before now, but all that I have hitherto seen—in Europe, the West Indies, the Azores, &c.—are mere bushes compared to Tahitian specimens. And the fruit! they hang in great yellow globes by thousands, and, much to the advantage of the pigs, in lesser numbers lie on the ground, while other trees are splashed white with orange blossom. As we enter the house again we are astonished at the display on the table—glass, electro-plate, napkins, &c.; two huge bouquets of hibiscus and orange-flower, of whose delicious odour the room is redolent; heaps of oranges; and in each wine-glass-shaped tumbler rested a coco-nut, with just its top cracked off, the fibres acting as a hinge to the lid of this finest of nature's goblets. And don't pour out the water into the glass unless you want to lose all respect in Teré's eyes; drink from the nut itself.

I had brought with me sherry, bread, and potted soups of turtle—mock and real. These I jumbled together into a pot, which had to be sent for from a neighbouring hut, so full

were all Teré's of fish, fowl, and vegetables. The cooking was going on in an outhouse, and the cooks were two grand young giants, bare-legged, kilted, with wreaths of flowers and ferns on their heads—most bacchanalian-looking.

In the meantime in front of the house, a gathering of some twenty men, women, and girls are sitting on the grass, the latter combing and oiling their long black hair with scented coco-nut oil, and making themselves look pretty (artificial means, I regret to confess, were required by the majority of them) with flowers in their hair and ears, which also our handsome hostess is doing. And so, when our soup is ready, we sit down with Teré and his charming wife, whose hair falls over a long chemise of pale sea-green. And a most admirable dinner we have—soup, and fowl, and fish, and huge fresh-water prawns *ad lib.*

Now, too, the natives outside strike up their song, the hymnene. They sing in parts, one voice commencing, joined in immediately by others, though by whom, and by how many, it is hard to tell; and then from somewhere a chorus of r's comes rippling in, and from another a flood of l's come bubbling, rapidly, rollicking, jovially; then dwindle the r's and are gone, leaving the l's alone in the current of song, which in their turn vanish, and in come again the r's with a rush. And so it goes on, uniting, diverging, joining all together in the prettiest manner. But what delighted me so much was that, whether in the back or foreground, whether above or below, I know not, there was always audible a drone, a sound sweet to my ears; a drone as of the bagpipes, which I would sooner listen to for ten minutes than the finest opera for a whole evening. Do you say "Bah! merely old association!" It may be so, I cannot tell, but give me (when exiled!) a piper before Patti, the wildest screech of a bagpipe before the most ecstatic note of a Nilsson.

I had brought with me a liberal allowance of rum, with which, by Teré's permission, I plied the singers, and with great effect, indeed with perhaps too much effect; I had

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imagined the bottles were circling among "all hands," but it appeared later that the men were appropriating it solely. We sat in the verandah late into the night, candles lighting the pretty scene. The singers were most indefatigable, and one man—who himself did not sing—kept them going when inclined to lull, by shouting *Hymnene, Hymnene!* when off started again the bubbling rippling song. Two of our fellows, with Mr. Green the missionary, and two blue-jackets, looked in at nine o'clock, on their way to a lake among the mountains, where they go provided with spirits and fishing gear to catch some curious eels which live in it. It being in Teré's district he provided guides and horses, and they went on and slept at a house a few miles further on.

From them I heard that the head man of the party who acted as guides and porters was just sufficiently "no that fou" as to betoken that my rum was acting in a demoralizing manner, which was sad, very! We found that the number of the singers was increasing, rumours of rum perhaps tending thereto. I had one bottle left, which I much wanted to give, but Teré would not allow me, though I begged permission hard; but no! he was firm, interpreting visions of singers starting up and going through a short spasmodic wriggle of a dance, as signs that there had been enough in that way already, which perhaps there had been; the opera ended, and we went to bed. We each had a room to ourselves, with large four-poster beds.

Early next morning I had a delightful bathe in a mountain stream which crosses the road some few hundred yards from the house. Right under the bridge there was a delicious pool, where, from the passing natives, I lay *perdu*. Two young people, however, observed a strange white object beneath them, through the interstices of the planks, stopped, and uttered startled exclamations; but a *yarra-na* and laugh from me sent them away at a run. Coming back, I found W. sketching, surrounded by the dusky beauties of the place, who were sauntering amidst the greenery, with

flowers in their hair and ears, and looking too delightfully happy and lazy; and how pleasant it was to imitate them, to forget all about our ship and the sea!

Villages in Tahiti are often very difficult to discover; the huts are so much hidden among foliage and so far apart from one another, that you have to be told "this is a village." And then you hear that in this village live one to two hundred natives. Close to Teré's cottage was a great oval-shaped building, built in Tahitian style, used on public occasions, and capable of holding several hundred people. Teré gave us an excellent breakfast; but his fresh oysters from the shore were quite uneatable. The sub-chiefs again appeared, one with a large book, in which are inscribed the debates, or rather, I suppose, the general sense of the meeting, each report being signed by Teré and by them, and then sent in to the Native Affairs Office at Papeete.

We asked what all the talkee-talkee had been about; something about the payments under the *loi sur l'ivresse*,—and also the elder men had complained that all the work and money were given to the young men, and that they could make nothing. It was on this subject that the old wag dilated, and amused the assembly so much. He looked for all the world like an ancient Roman standing up there at the foot of a tree, a green wreath round his well-shaped head, and a fine Roman nose in profile.

It was curious to see the contrast in manner between a little French civil engineer, fussy, quick-speaking, and rushing wildly about, and the calm gravity of Teré, as well as the take-life-easily ways of the villagers, who laughed at his jokes, and then he rode off as if all the cares of Tahiti were on his back. And now our carriage is ready, into which are put dozens of oranges, bouquets of flowers, a duck and a hen, both making a hideous cackle, all which are presents from Teré, to whom, to Madame, and to their pretty children—playing hop-sotch—we now say good-bye.

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sketches, while I strolled on, meeting pictures of Tahitian life and manners on the road. First I met a horse being led by a little brown thing, over whom the horse had the most complete control, wandering from side to side of the road to crop at the grass, quite regardless of the mite who tugged hard at the halter. However, slowly they came along, and she led him down to the river, over the parapet of whose bridge I was leaning, and the toddle looked up at me, waved her hand, laughed and bubbled out some remark in a confiding way which was very pretty. But I could only say *yarra-na*, though I am sure a conversation would have been very instructive, and what she most wanted.

They learn to dance very young in Tahiti; here comes a little lithe figure of a girl, perhaps aged eight years or so, and I say a word to her, no matter what; one learns that when one comes to Tahiti; and she, placing her hands on her hips, will straightway commence a wondrous wriggling dance, a dance all quiver and shiver, a dance of real twinkling feet, a butterfly flit as if treading on air. And finally, having danced and wound herself up into a state almost fearful to contemplate, she subsides, panting, and you feel inclined to go and pick up the shaken-off pieces. How different from the slow, carefully-taught dancing of the Japanese and Malays! for this merry-eyed, curly-pated brat is too young to have been taught, she can only have seen; so the conclusion one arrives at is that she is possessed of a dancing demon, which is the truth; and I know other people in other countries who are also possessed of this demon—don't you? The only difference is one of kind and degree. I wonder what a South Sea Islander would think of a kilted Scotch ball-room—my conscience!

We sent our amateur blue-jacket band on shore several times to play to the populace, and the natives voted our band to be much more the South Sea thing than the band of the French admiral's ship lately here, who, no doubt,

played all sorts of beautiful operas, but not the jig-jig tunes beloved by the dancing Tahitians. The Governor gave us a dance at his house soon after we arrived; all the native royalty and *beau-monde* of Tahiti were there, while outside the fence were gathered the natives to listen to our band, which played in the verandah. *Beaucoup de tapage!* as the Governor's little daughter said to us going into the house. Old Queen Pomaré is very much alive, though fearfully sat on by the French authorities. She is a dear old lady, neither young nor pretty, but full of Tahitian life. You should have seen her dark face light up, and her eyes glitter as our band suddenly struck up a Tahitian hymnene tune, the fastest, merriest, jumpiest tune in the South Seas. She stamped her foot, and said yes! yes! energetically to a daughter of hers whom somebody asked to dance, quite looking as if she herself would have danced there and then a *pas de deux* with the youngest dancing maniac present.

These South Sea queens and princesses all smoke cigarettes as a matter of course—tobacco rolled up in the leaves of the pandanus-palm, and handmaidens with boxes of cigarettes are in attendance outside. Mighty pretty they are, these handmaids, and dressed most charmingly. Do try it! A long flowing white night-gown (or *sacque*, an' please you!), over it a tartan-plaid, worn Hielan' fashion; bare feet; hair worn in two long plaits hanging down the back; and on top a pretty little hat, made of arrowroot, and adorned with a garland of flowers. Royalty, also, wears the *sacque*, and their ball-room costumes are gorgeous in colour.

In mercy to you I here stop these Tahitian reminiscences, for I might go on for pages more, telling you of princesses, of beautiful scenery, of torchlight fishings, and of a hundred incidents such as are to be seen nowhere outside the South Seas, but half whose pleasantness lay in the company—European or native—they were met with, and which I cannot drag into this my printed letter.

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Leaving Tahiti on Oct. the 4th, we had a long and tire-
some cruise to Juan Fernandez—a cruise of forty days—
arriving there on Nov. the 13th. On the way across we
passed over a large "manganese area;" red clay being
deposited in the deeper parts, imbedding nodules of
manganese peroxide, enormous numbers of which came
up in the trawl. The nuclei of these nodules were ceta-
ceans' tympanic bones, sharks' teeth, bits of pumice, agate-
like minerals, &c. On one occasion 100 sharks' teeth, 30
tympanic bones of cetaceans, and portions of other bones
came up, all coated with peroxide of manganese. As usual
when we have trawled on this kind of ground, we found
the bottom fauna very meagre.

Juan Fernandez belongs to Chili, and is at present
rented by a Chilean for two hundred a year. He keeps
cattle and sells them to whalers and passing ships, but
most of his rent is paid by means of seal-skins, which
animals breed on a small island a few miles away. His
lease is up next year, and as the speculation has not paid
him, he intends killing every seal—male, female, and
babies—he can get hold of until that time; he hitherto,
in his own interest, having observed a "close time."

Excepting the cattle dotted about at the foot of the hills,
and the house in which this Chilean lives, the appearance
of the island must be precisely the same now as when the
piratical buccaneers of olden days made it their rendezvous
and haunt wherefrom to dash out and harry the Spaniards;
the same to-day as when Alexander Selkirk lived on it, the
involuntary "monarch of all he surveyed;" the same
to-day as when Commodore Anson arrived with his
scurvy-stricken "crazy ship (the *Centurion*), a great
scarcity of water, and a crew so universally diseased that
there were not above ten foremast-men in a watch capable
of doing duty," and recruited from his terrible voyage.

Certainly, until I saw Juan Fernandez, I had never
sufficiently pitied Selkirk, for I had dreamt that the real
island must be like Defoe's ideal island, a pretty, pleasant

little spot, with tree-clad hillocks rising here and there from low undulating land, forming a foreground to the more distant crags and rocks among which he learned to catch the goats—rivalling them in speed and activity among the rocky fastnesses. But that imaginary foreground exists not all, for Juan Fernandez is all steep hill and mountain.

The scenery is grand; gloomy and wild-looking enough on the dull, stormy day on which we arrived, clouds driving past and enveloping the highest ridge of the mountain, a dark-coloured sea fretting against the steep cliffs and shore, and clouds of sea-birds swaying in great flocks, to and fro, over the water; but cheerful and beautiful on the bright sunny morning which followed—so beautiful that I thought "this beats Tahiti." Our anchorage is in Cumberland Bay: shallow in form, but disagreeably deep in depth close up to the shore, from which rises a semicircle of high land, forming bold headlands on right and left, and sweeping brokenly up thence to the highest ridge—a square-shaped, craggy, precipitous mass of rock, with trees clinging to its sides to near the summit. The spurs of these hills are covered with coarse grass or moss, and in the ravines are woods of myrtle and small tree-shrubs. The soil beneath these trees is singularly loose, and where they grow, as they do, on exceedingly steep slopes, it is dangerous to trust to them for help, as the roots easily give way, and down you go, carrying tree after tree with you in your descent.

Half a mile from the ship there was splendid, but laborious, cod-fishing; laborious on account of sharks playing with the bait, and treating your stout fishing-line as though 'twere made of single gut; also on account of the forty-fathom depth these cod-fish lived in. From beneath the ship's keel we hauled up cray-fish and conger-eels in lobster-pots by dozens; and round about her sides flashed shoals of fish—cavalli—only requiring a hook with a piece of worsted tied roughly on, and swished over the

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And on shore, too, there was something to be seen and done. There was Selkirk's "look-out" to clamber up the hill-side to—the spot where tradition says he watched day after day for a passing sail, and from whence he could look down on both sides of his island home, over the wooded slopes, down to the cliff-fringed shore, on to the deserted ocean's expanse.

Down the beds of the small ravines run burns, overgrown by dock leaves of enormous size, and the banks are clothed with a rich vegetation of dark-leaved myrtle, bignonia, and winter-bark tree-shrubs, with tall grass, ferns, and flowering plants. And as you lie there humming-birds come darting and thrumming within reach of your stick, flitting from flower to flower, which dot blue and white the foliage of bignonias and myrtles. And on the steep grassy slopes above the sea-cliffs herds of wild goats are seen quietly browsing—quietly, that is, till they scent you, when they are off—as wild as chamois.

One wild kid was shot, and we thought that we had never tasted better meat than it yielded.

Having been at Juan Fernandez two days, we sailed on Nov. the 15th, and arrived at Valparaiso on the 19th. "The trawling between Juan Fernandez and Valparaiso was particularly interesting; animal forms were much more abundant than they usually are in the Pacific; and the general character of the assemblage resembled in a remarkable degree that of the fauna of the Southern Sea in the neighbourhood of the Crozets and Kerguelen, many of the species being identical.¹ The depth was 2,225 fms., and the bottom a bluish mud, the surface layer containing little or no carbonate of lime, and, curiously enough, a

¹ There are two species of humming-birds on the island of Juan Fernandez. Of the larger species the male is a red-brown colour, and the female greenish. In the smaller species both sexes are coloured greenish, with bright red metallic crowns. These last were shot also in the Straits of Magellan, and they are called the Chilean Fire-crown.

deeper layer, with a considerable proportion of *Globigerina* shells. There was no considerable quantity of manganese in the sounding; and I am inclined to think that we had struck upon one of the highways by which migration takes place to the northward from the Southern Sea." So thinks science.

As I said something about the Gulf Stream in a former letter I must mention its representative in the Pacific—the "Japan Current." We crossed it when nearing Japan, and found the stream flowing to the north-east at the rate of three miles an hour, between lats. $32^{\circ} 30'$ and $33^{\circ} 30' N$.

Depth in fathoms.	NORTH PACIFIC.		S. PACIFIC.	
	Max.	Min.	Max.	Min.
Surface	88.8	64.0	84.0	52.5
50	82.8	52.2	82.4	49.4
100	78.8	46.0	77.0	47.8
150	65.0	42.3	67.5	44.7
200	60.0	40.1	60.6	43.3
300	51.2	39.4	50.3	41.8
400	44.7	38.0	45.4	40.0
500	42.4	36.8	43.3	38.8
600	41.0	36.5	41.7	38.0
700	39.8	36.0	40.4	37.1
800	39.0	35.5	39.2	36.3
900	38.2	35.0	38.0	36.0
1000	37.4	34.8	36.8	35.5
1100	36.7	34.6	36.4	35.2
1200	36.3	34.5	36.0	35.0
1300	35.9	34.3	35.5	34.5
1400	35.5	34.2	35.2	34.5
1500	35.1	34.0	35.0	34.0

The above are the maximum and minimum temperatures registered in the Pacific. The bottom temperatures range from 33° to 34° .

As we had so much to do with one of the productions—the tortoises—of the Galapagos Islands, I shall extract some notes anent that subject from Darwin's account of them. The cheerful nature of their habitat is thus described (but abbreviated):—The islands are all formed of volcanic rocks. Some of the craters, surmounting the larger islands, are of im-

mense size, and they rise to a height of between 3,000 and 4,000 feet. Their flanks are studded by innumerable smaller orifices. I scarcely hesitate to affirm, that there must be in the whole archipelago at least 2,000 craters. . . . Excepting during one short season, very little rain falls; but the clouds hang generally low. Hence, whilst the lowest parts of the islands are very sterile, the upper parts, at a height of 1,000 feet and upwards, possess a damp climate, and a tolerably luxuriant vegetation. . . . Nothing could be less inviting than the first appearance (of Chatham Island). A broken field of black basaltic lava, thrown into the most rugged waves, and crossed by great fissures, is everywhere covered by stunted, sun-burnt brushwood, which shows little sign of life. The commonest bush is one of the Euphorbiacæ: an acacia and a great odd-looking cactus are the only trees which afford any shade. The day was very hot, and the scrambling over the rough surface and through the intricate thickets was very fatiguing; but I was well repaid by the strange cyclopean scene. As I was walking along I met two large tortoises, each of which must have weighed at least 200 lbs.; one was eating a piece of cactus, and as I approached, it stared at me and slowly stalked away; the other gave a deep hiss, and drew in its head. These huge reptiles, surrounded by the black lava, the leafless shrubs, and large cacti, seemed to my fancy like some antediluvian animals.

In addition to the tortoises the scene is enlivened by great black lizards, between 3 and 4 ft. long, which abound on the rocks on the shore; and on the hills, an ugly yellowish-brown species was equally common. The few dull-coloured birds cared no more for me, than they did for the tortoises. The staple article of food of the colonists (banished coloured people from the Republic of the Equator, two or three hundred in number; to say nothing of the whalers, and of the Bucaniers in olden days) is supplied by the tortoises. Their numbers have of course been greatly reduced in the islands, but the people yet count on two days' hunting giving them food for the rest of the week. (That was in 1830.) It is said that formerly single vessels have taken away as many as 700, and that the ship's company of a frigate some years since brought down in one day 200 tortoises to the beach.

The tortoises frequent the high damp parts, but they likewise live in the lower and arid districts. Some grow to an immense size—requiring six or eight men to lift them from the ground, and affording 200 lbs. of meat. The old males are the largest, and can be distinguished from the female by the greater length of the tail. The tortoises which live on those islands where there is no water, or in the lower and arid parts of the others, feed chiefly on succulent plants. Those which frequent the upper regions eat the leaves of various trees, and lichens. They are very fond of water, drinking large quantities, and wallowing in the mud. The larger islands alone possess springs, and these are always situated towards the central parts, and at a considerable height. The tortoises, therefore, which frequent the lower districts, when thirsty, are obliged to travel from a long distance. Hence broad and well-beaten paths branch off in every direction from the wells down to the sea coast; and the Spaniards by following them up, first discovered the watering-places. Near the springs it was a curious spectacle to behold many of these huge creatures, one set eagerly travelling onwards with outstretched necks, and another set returning, after having drunk their fill. The inhabitants say each animal stays three or four days in the neighbourhood of the water, and then returns to the lower country. It is certain, also, that tortoises can subsist even on these islands, where there is no other water than what falls during a few rainy days in the year. When purposely moving to-

ward any point, they travel by night and day, travelling a distance of about eight miles in two or three days. The male utters a hoarse roar when in company with the female, who lays her eggs either on sandy soil, when she covers them over, or on the bare rocks—where in a fissure seven have been found together.

The flesh of these animals is largely employed, both fresh and salted, and a beautiful clear oil is prepared from the fat. When a tortoise is caught, the man makes a slit in the skin near the tail, so as to see, inside its body, whether the fat under the dorsal plate is thick. If it is not, the animal is liberated; and it is said to recover soon from this strange operation.

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CHAPTER VIII.

VALPARAISO TO MONTE VIDEO OVERLAND.

IT had, you know, long been a dream of mine (should I leave the *Challenger* at Valparaiso), to go home overland—across the Andes and the Pampas; and for once in a way my dream came to pass. There were two of us going home, and our chief difficulty was that we knew scarcely any Spanish, or at least so little as only sufficed for purely animal wants. So to D——, the chief civil-engineer of the future railway which is to cross South America, we propounded the question, whether he thought the idea reasonable or not; and he did *not*. He and a large staff have been surveying the mountain valleys and passes for the last four years, with the result that the survey is finished; a boldly planned route, including a tunnel two miles long, has been found for a railway, by which before half a century is over we shall probably go from Buenos Ayres to Valparaiso. But in the meantime most of the journey must be done on horseback, in coaches, and river steamers. Our deliberations came to this, that if we felt inclined to wait a fortnight, he would come with us; so, rather loth, we let the first steamer sailing from Valparaiso go without us, and by the next fortnightly one we sent our luggage to meet her at Monte Video. I did grudge that fortnight, you may be sure; but this was a rare chance of seeing such mountain scenery as was not to be missed, and besides which it was out of the regular "globe trotter's" route. And in the meantime I enjoyed life at Santiago, capital of Chili.

Santiago is four and a half hours away by rail from Valparaiso, the line first skirting the bay, and then leading inland by the beautiful Quillota valley, a broad level bed, all green and smiling, with vineyards, with fields of corn and pasture, with orchards of peaches, cherries, and walnuts, with long rows of poplars forming avenues to the roads and hedges to the fields, with the Aconcagua river, fed from the snows of the Andes, meandering down it, and bounded by sandy yellow-red hills, bare of vegetation, and scratched with silver and copper mines.

At the stations, boys and girls sell baskets of fruit, and of fish caught in the river, and huge bouquets of flowers. Another most noticeable production of Chili is also to be seen at one of these stations, and that is the beauty and youth of the village of Quillota, who patrol the broad uncovered platform, to stare at and be stared at by the passengers. It is a charming custom, and they are well worth looking at, for there is plenty of real young beauty in Chili. At the head of the valley—half way between Valparaiso and Santiago—we stop to breakfast, or dine as the case may be, at a station, and then on we go, the line leading across a broad range of hills, which it climbs up at a steep gradient, clinging to the abrupt and rocky mountain flanks, crossing ravines by high bridges, tunnelling through spurs or twisting round their corners in what appears a rather daring manner. From the summit there is a long and gradual incline into the great plain of Santiago through typical northern Chilean scenery, the hills yellow and reddish coloured, sprinkled with bushes and cacti, and ground doves flying about in great numbers. Already in the Quillota valley, and as we cross the hill range, we catch a glimpse now and then of the snow-streaked Cordillera ahead, looking blue in the contrast with the yellowness of the hills surrounding us; and as we rush down into the plain we see the great range stretching away from north to south in all its glory—a disappointing glory, it must be added. Disappointing because

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the highest snow-clad range is hidden from where we are ; because the sky-line of the highest ridge in our view is so regular, no peaks towering high above the general level ; disappointing because the whole range looks scorched and barren, tinted all rocky hues between light-brown reds and ashy-greys, streaked only here and there with purple shadows and veins of snow ; disappointing, finally, because the range from here appears of no great height, though away to the northward two great shapeless blocks rise grandly above the general level, and the most distant of those is the volcano Aconcagua, 24,000 feet high.

Chili is in distress about the snow-fall on the Andes, which this year has been very small, and has, they say, been gradually diminishing for the last four years, and to Chili no snow on the Andes means no water in the valley-plains, and consequently no cultivation of any kind. There being no rain-fall in Northern Chili, it is only where rivers run, or run near, or where water is led by irrigation, that any cultivation can exist, and the proportion of desert—sandy yellow-red soil sprinkled with bushes—to cultivation—mere strips of pasture, and vineyards, and orchards along the water beds—is very large indeed. Northern Chili I know well, and can testify to its sterility, but Southern Chili I do not know, and there they tell me are boundless plains of wheat, and further south still, immense tracts of forest, which they say is a glorious country. Northern Chili is all mines, gold, copper and silver ; while Southern Chili is all agricultural, and feeds its northern population.

What strikes one in Chili more than in any other country I know, is the marvellous transparency of the atmosphere ; objects any number of miles appearing to the naked eye here as they would elsewhere as seen through a field-glass. But this dry atmosphere has another effect on the landscape and on you ; every road is deep in dust, every tree and bush is covered with it ; for miles and miles you ride between high mud walls, you pass mud cottages, you get choked and blinded with mud dust.

This you will find in the valleys; but there are stretches of hilly country, where the soil is hard, where for hours you can ride on and on across country, glorious for paper-chasing or hunting, as years ago I did there wildly paper-chase with men-of-war parties. *Apropos*, the popular idea that sailors as a class cannot ride well, I believe to be a delusion and a libel, which belief I record here accordingly. And here and there in this arid land you will find an oasis, a villa, charming people, flowers and trees as there are near Valparaiso; while inland you are asked by hospitable Chilians to their country-houses, where in imagination you may be once again in Spain, listening to the Spanish language and guitars, looking at Spanish beauty, and indulging in the *dolce far niente*, "no end."

You must above all things not confound Chili in the same category as other South American Republics. Chili is almost a model republic; her presidents are gentlemen, rich, not given to killing or being killed; her wealth is large in gold, copper, silver, and wheat; her servants are uncorrupted to a singular degree; her intelligence is wide-awake in matters of religious freedom and the priesthood; her population is peaceable, and she only wants more rain and less dust to be a delightful country, which I think she is far from being as she is. When I say that the population is peaceable, I only mean that they do not go in for *émeutes* or revolutions; but Chili is far from being a country in which I should like to knock about by myself unarmed. Twice, when I was here before, was I chased when out riding by drunken Gauchos, who in the one case brandished an axe, and in the other pointed a pistol. I don't think I ever rode much faster in my life than when I galloped away from them! Their favourite mode of attack is brushing close past you on horseback, and hitting your leg with their heavy wooden stirrups, and so tilting you off; unless prepared against it, this is a most effective method of dismounting one. These Gauchos are, one and all, splendid riders, and of sufficiently cut-throat appearance.

Santiago is the Paris, *par excellence*, of all towns in the Republics bordering the South Pacific. It is built at the foot of the mountains, on a great agricultural plain running along the base of the Cordillera, with hill ranges between it and the sea. Fine hotels, clubs, and cafés; houses enclosing a *patio* bright with flowers, fountains, and coloured pavements; every window barred with handsome iron-work; tramways along the streets; fine cathedrals and churches; good horses and somewhat too flashy carriages; a theatre and newly-built opera-house, a gem of its kind; beautiful women, whether attired in Parisian fashion or as Chilian peasant; a visibly wealthy population in manners and dress; a town full of luxury and dissipation and scandal; of life, riches, and gaiety; very expensive, hospitable, and enjoyable in every way, more so than its rather dull rival, the Peruvian capital, Lima.

Valparaiso is a business city, very dull, and very prosperous. It is built on the shores of the bay, and terracing the steep red slopes of high hills rising abruptly in rear. We bought our riding paraphernalia and Derringer pistols there, and one fine morning we said good-bye to our messmates and the *Challenger*, and started away by rail for a little town called Santa Rosa de los Andes, built in a flat-bottomed, cultivated valley, branching off from the Quillota, and called the "heart of Chili." Santa Rosa lies near the foot of the glen by which one ascends to cross the mountains by the "pass of Aconcagua," and lies to the north and some distance from Santiago. Here during that afternoon and the next day, we were busily employed hiring horses, mules, and servants, packing our things, buying *charqué*, and country wine, living meanwhile in an inn kept by French people. An awfully hot and dull little town it is, Santa Rosa; a pretty plaza with fountain in the centre, surrounded by flower-beds, and they again by avenues of trees. In the daytime the streets are deserted, and the sun glares fiercely down on one-storied houses with walls painted yellow or white, and on roads deep with impalpable

dust. But in the evenings what life there is in the town wakes up ; then pretty signoritas walk round and round the plaza, a barrel-organ plays "La Marseillaise" to the splashing accompaniment of the fountain, candles flicker beneath the trees, and we smoke, yawn, and listen to the endless scandal of the town and country generally.

On both these evenings we saw grand sunset effects on the Cordillera. Heavy masses of crimsoned clouds hung close over the mountains, whose summits—broken and isolated as seen from here—flashed angrily back the fiery light, as gradually from the deep purple gloom enveloping their lower flanks, they rose to meet the clouds.

But I must tell you the arrangements for our journey. There are five of us going across the Andes ; we two "Challengers" each hire one horse to ride ; D. and a friend of his each have two ; a young Chilian gentleman-farmer rides his own horse, and between us all we take two pack-mules for our traps. In addition to these, D. has two fine mules of his own, while two Chilian servants, riding their own mules, drive the spare animals. At Santa Rosa we rig ourselves in *ponchos*—a gaily-coloured square piece of blanket, or other stuff, with a hole in the centre through which goes your head ; in straw hats with brims far exceeding my shoulders in breadth ; in cord tights, gaiters, spurs with rowels of enormous diameter ; and gaudy silk handkerchiefs round our throats. The saddles are double-girthed, and some have under and over them I don't know how many sheep-skins, which is the Chilian fashion of riding. B. and I having abjured all thoughts of civilized cleanliness, carry nothing but a small bag and blanket each. And so on the evening of the second day we were all ready for a start on the morrow. The one doubtful item of our equipment were the Chilian servants, who taking advantage of some money advanced them, became uproariously drunk, and for a time could not be found ; but in an evil moment for them they wandered into the

courtyard where all our animals were stabled, and D. promptly locked them in.

Awoke at day-light by our now perfectly sober Chilians, we boot and saddle, pack the mules, and start away on our trans-Andine ride in great spirits, the morning air cool and delicious, past orchards, vineyards, and poplars for a mile or two, and then we struck up a broad mountain glen, down which on our left tore the Rio Aconcagua, while on either hand were high yellow-red mountain ridges sprinkled with bushes and cacti, as is also the shelf along which we ride. Our pace is a slow jog-trot, "travelling pace," and behind us are the muleteers driving the spare animals in front of them. And as we go jog-jogging on, the valley gradually narrows; the sun gets high and the heat oppressive: we cross the river by a bridge; then rest for a while at a guard-house, where we pay so much for each animal passing into the Argentine Republic. There is no shirking the custom duties on the land frontier of Chili. The Andes can only be crossed by certain passes, led to by valleys which are the only possible roads to them. And in these valleys, small solitary guard-houses suffice to collect the tolls levied on all passing animals and merchandise,—no light work, for 72,000 oxen alone pass into Chili yearly, to say nothing of the thousands of mules with their heavy packs.

Again we cross the river, enter another glen opening on our right, presently riding across the face of a blue-coloured landslide, which they told us at the guard-house was impassable, but D. knows better. The stones came rattling down past our horses' feet, which slid down a foot or so now and then, but held their own cleverly, the loosened rubble pouring into the river, on whose edge the landslide rested below us. Then we zigzagged up a steep bit on to an upper path by which the pack-mules went—avoiding thus the landslide—and so continued along a road winding round precipitous rocky banks for a while, and then with the broadening bed of the valley we turn to the left,

arriving at eleven o'clock at a rancho, called Los Hornillos, having ridden thirty-one miles, and ascended 5,000 feet.

This house belongs to a once famous highwayman, the terror of all peaceable travellers. For many years he flourished in his profession of robbing and cutting throats with impunity, in spite of everybody's efforts, by shooting and hunting, &c., to restrain him; so at last in despair the Government offered him a farm near Santa Rosa if only he would give up his tiresome manner of life, and he did, becoming a worthy citizen of Chili. During certain months of the year, he comes up here for change of air with his family, an old wife and five charming daughters, romping skylarking girls the whole lot of them; the eldest rather *passé*, but the youngest "just out," and very pretty, as are all the rest. They prepared us an excellent breakfast of *cazuela* and roast lamb. *Cazuela* is the national dish of the country, and is chicken broth with the chicken cut up in it, with pumpkins, &c. Afterwards some of the girls played guitars and sang, while the others danced "quakers" with our young Chilian friend. Then they sang impromptu songs in our honour, while excellent country wine circulated freely. The fun grew fast and furious, and at this rate we soon found we should never get to our journey's end, so very reluctantly we bade good-bye and rode on for ten miles, and arrived before dusk at the Yuncqual rancho (7,223 feet).

The scenery of to-day's ride has not been very grand; the road leading up gradually ascending valleys bounded by ridges, from two to three thousand feet high, their lower flanks sprinkled with bushes and giant cacti, but scarcely ever sufficiently to hide the yellow ground beneath them. During most of the day, being so closely hemmed in by the mountain ridges around us, we lost sight of the back range, but during the last hour's ride a great snow-streaked purple block towered over the lower ridge on our left. The uneven valley bed, the whole way, has been more or less covered with bushes, cacti, and stunted trees, each

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looking more burnt up and miserable than the other. From one side-glen came rushing a black torrent, mingling with the red-coloured torrent whose course we have followed all day, the black and red streams keeping distinct for some time after their junction. Up that glen, too, we got a view of another fine snow-streaked purple block.

At the Yuncqual rancho we found a *tropa* of mules encamped. These troops of pack-mules stop every night, the packs are taken off, and arranged in a great circle, inside which the arrieros light their fire and sleep, while the mules wander off to pick what scanty herbage they can find, the old bell-mare, which accompanies each *tropa*, keeping them by the sound of her bell from wandering far. We were given a small mud room to sleep in, on whose floor we lay our saddles and saddle-cloths to form pillows and beds. The daughter of the house makes us a capital cazuela, and then we unroll our blankets, roll ourselves into them, and sleep peaceably during the night.

It was cold enough next morning, in all conscience, when our servants awoke us at dawn, and my mild remark, that I should like to wash my face, was met with the sarcastic rejoinder that if I did, I should be the only one—for all the skin would be off my face! so I didn't. We drank hot wine prepared by the servants, and found ourselves heaving deep sighs with a sense of relief—due I suppose to the unaccustomed elevation at which we were. We toiled up the uneven bed of a broad glen for two miles or so, and then zigzagged up a steep mountain side, the animals having to stop every few minutes, and fill their lungs with the rarefied air—a long, toilsome drag for them; and so we got to the top, on to a small plateau, and the entrance of another valley. Near by a lake here, in which D. says are eyeless fish, we breakfasted by the side of a burn, and then trotted along the level bed of a narrow glen, the mountain ridges on either hand of a dark colour, and their lower slopes covered smoothly with landslides.

At the head of this glen we came to the final ascent, which we zigzagged up again in single file. While yet in the valley below we saw long strings of pack-mules winding down the path; looking like black ants against the bare mountain slope. As we were watching we saw two fall, and roll down over and over in a cloud of dust with no power to stop for two hundred yards or so, and there they lay motionless, and we thought surely dead; but they were only stunned, for after the muleteers had taken off their packs they presently got up, and appeared none the worse. How their legs were not broken was a marvel, scrunched up at every roll as they were under the weight of their heavy packs. A gully at the bottom of this steep bit was full of skeletons of mules and oxen, which had thus rolled down and were killed. A short distance further up we met a great herd of descending oxen, five hundred or more, fine big fellows, lowing, as slowly and sturdily they came trampling along.

And now we are at the top of the pass—the Cumbre; 12,656 feet above the sea, and five miles from the Yuncqual rancho. The scenery was of course magnificent, but still disappointingly magnificent to me. Behind us lay a chaotic heap of mountains, the lower ones coloured all shades of light and dark ochres, or dusty greys, the ravines between them lying in shadow, while the higher blocks, some close to us, some far away—were coloured purple, veined, or capped with snow. In front and far below us lay a valley, with level river-threaded bed making away to the left—its course to our right being hidden by a shoulder of the ridge on which we stand—bounded by sterile yellow and red-coloured mountain ridges, which immediately in front of us rose in a great black mass, through which in the face of a precipice ran a broad band of white (quartz?) rock.

The sky was cloudless, the atmosphere resplendently clear, and a strong westerly wind blowing coldly—so coldly to us coming from the hot breathless valleys below that

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we were glad to take shelter behind a rock. Now for the first time we saw the great Condor of the Andes sailing over the mountain crests, casting a watchful eye, no doubt, on the animals toiling wearily across the Cumbre. Riding down the long steep slope of the ridge into the valley below, we again passed hundreds of mules slowly ascending, zigzagging up in long winding lines, diminishing gradually in size as the eye followed them downwards. The muleteers, shouting and twirling their loaded bridle-ends above their heads, kept driving them on, and above their constant shouts, and the shuffling sounds of hurrying hoofs, one heard the tinkling bells of the old bell-mares. Breaking the black ant-like strings of agile heavily-laden mules were herds of plodding oxen, 22,000 of which are driven over this pass yearly into Chili. Lower down still we passed some women riding across.

When arrived on the valley bed we turned to the right, and all forenoon rode along a stony sterile valley, the heat intense, and the glare painful to our eyes, and making us feel very sleepy. The river, coloured reddish as they all are, flowed down on our right, and barren mountain ridges, their lower flanks covered to a great height with heavy landslides, rose, as ever, on either side. We passed a small cairn of stones, and a wooden cross, which marks the spot where a few years ago an Italian naturalist was attacked by highwaymen, and killed. Soon after we had left the Cumbre, we saw, to our astonishment, that a great black cloud had covered it, though no sign of cloud was visible when we passed over, and above us still the sky was clear. Great numbers of condors were wheeling over the valley, and the reason of it we came suddenly upon in the shape of a recently dead bullock, at which a whole flock of these carrion birds were tearing ravenously, so gorged with their feast that they were barely able to rise and flap heavily across the river, where they sat watching us, their feathers and heads covered with blood.

Early in the afternoon we arrived at a rancho, whose



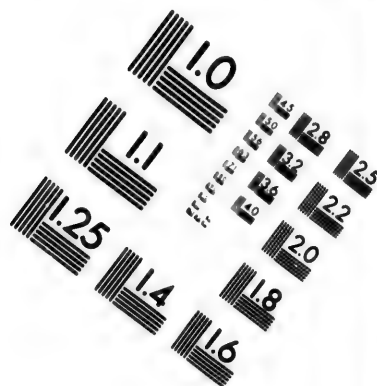
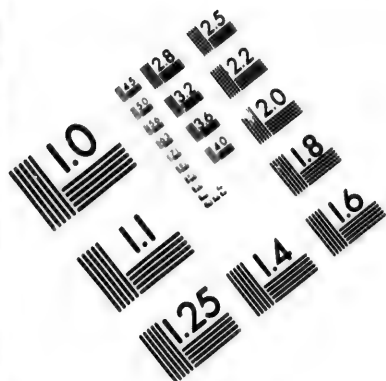
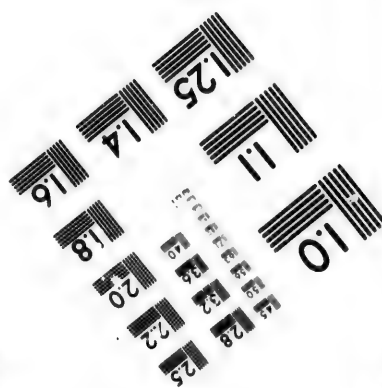
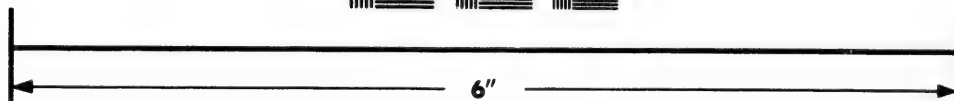
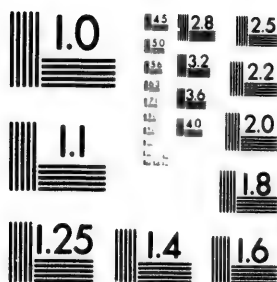


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owner we had previously met in chase of three mules stolen from him last night. Close by is the famous "bridge of the Incas"—a natural bridge of earth spanning the river, here flowing at the bottom of a deep cutting. The bridge is curious—nothing more; the top is level with the surrounding ground, and the earth and shingle forming it have been cemented by the vapours of hot springs underneath. These mineral springs are half way down the bank, and almost beneath the arch. There are three bubbling up into little pools forming natural baths, from one to several feet deep with sandy floors. One of these baths is so deep and small that there is only just room to let yourself down feet foremost, where, immersed to your shoulders and supported by your hands, you stand, the bubbles streaming ticklishly up from below. It was most delicious, the water warm, fizzing and frothing like champagne, clothing one with a beautiful garment of tiny bubbles. I was tired and stiff before I bathed, but when I came out of the water, lo! I was a new man, fresh as paint, my joints supple, and ready to ride any distance further. I had never before felt such sudden and invigorating effects from a bath. These springs are a good deal used by the natives, for (I believe) certain skin complaints, but as the water is always bubbling freshly up and over, this fact need not alarm one. The arch underneath is covered with great knobby stalactites, among which green humming-birds were flitting in and out from their nests built in the holes.

After eating an excellent cazuela, we again mounted and rode down the valley—the finest stretch of valley-scenery we saw on the way across. The valley was still flat-bottomed and sterile, the mountain-slopes to a great height still covered with smooth conical landslides; but it was the colouring and the forms of the rocky ridge-crests which now formed the grand feature of the scenery. For usually the ridge-crests appear—as do their slopes—covered with yellow detritus, with rocks sticking out here

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and there; but now the landslides had shot down through narrow gaps in the tremendous rocks above, spreading fan-like as they descended, and of course all at the same angle. Above the landslides, tremendous crags and precipices, taking fantastic shapes of towers, of columns, and of buttressed walls, towered high in the sky. One particularly grand granite mountain, apparently standing alone, and seen by us through a break in the valley-ridge, we passed this afternoon. It was all of a deep brick-red colour, flushed brightly by the near setting sun, and above the red landslide slopes, rose, here symmetrically and there in wild confusion, a pile of columnar-shaped rocks, supporting (they seemed to be) a mass of rock—cyclopean ramparts, buttressed, pinnacled, and turretted, a fabled giant's castle.

As we rode on, the bed of the valley became more uneven, at a greater slope, and lightly sprinkled with small bushes. We passed by two large tropas of mules, camped out for the night, and presently turned to the left with the valley, climbed across a low spur, and rode down towards a group of houses standing amid some pasture, where we arrived at dusk. This establishment is called Puntas de las Vacas, and is ten miles from the Incas' bridge.

Here we found other travellers, one of whom was a rich cattle-dealer—a fine burly fellow, and a friend of D.'s; so he insisted on standing us all our dinner in a large room, wherein were three civilized beds. In the court outside was a picturesque gathering of horses and mules, and of muleteers sitting round fires. We had an excellent dinner of cazuela and beef, and then we slept the sleep of the tired between luxurious sheets. They say this cattle-dealer has made a vast deal of money in the trade of buying and fattening cattle on this side of the Andes and driving them over into Chili, the fat tending to keep them alive *en route*; but they are thin enough at their journey's end, where they are again fattened for the market. The

oxen and mules are driven across on different plans; the oxen rest and travel alternately every two hours the whole distance, while the mules travel all day long, resting and feeding all night.

Away early as usual, we crossed a river by a bridge, and jog-jogged on, always down the same long barren valley, always under unclouded skies, always suffering from an intense heat. An hour after leaving we had a long zigzag ascent and descent across a hill barring the valley. At the bottom of this, D. and his surveying party were once imprisoned for three months by walls of snow, which blocked the valley to such a height that scaling the mountain flanks was impossible; but at last, when only a small sack of beans was left, D., weak with scurvy, managed to crawl round the snow-wall, and so got the intelligence of their plight conveyed to Mendoça, whence pack-mules with provisions were sent, just rescuing the party in time, for all were down with scurvy, and one man was as nearly gone as possible. Some of the mules sent were loaded with bonbons, &c., a present from the loving ladies of Mendoça!

So on, on we go; bump, bump, bump, neither walking nor trotting; the heat tremendous, no breath of wind, dusty, stony roads, the rocky mountain-ridges again of a sandy yellowish-red colour, and more or less covered with detritus, and the red-coloured river tearing wildly down on our right. At intervals we pass tropas of mules and oxen. I believe we passed what was once called a danger, where the river flowed at the foot of a bold rocky promontory, round which, low down, by an admirable road, we rode. But there were signs of a path higher up, which may have been the danger. At mid-day we luncheoned by the side of a burn, which came down from a ravine in the hills, and then on we steadily rode, the valley-bed broadening considerably, and the ridges becoming lower, till we came to where we had to zigzag easily up the left-hand ridge, when we found ourselves on a large level plain, covered with bushes and surrounded by an amphitheatre of broken mountains. The sun was

setting, the air pleasantly cool, the sky turquoise blue, and the variegated colouring of the hills most beautiful as we now cantered along an excellent road towards a distant group of poplars and a green field studded with cattle. We started a herd of wild donkeys, which went galloping off in an active, undonkey-like manner; we hear they are capital eating: and so in course of time we arrived at the Uspallata rancho, thirty-six miles from Puntas de las Vacas.

Since leaving the Cumbre we have seen nothing of snow-clad lofty peaks, nothing but the bare mountain ridges bounding the long valley down which we have ridden. The scenery I should continue to call disappointing, but it was interesting, as being unlike any other mountain scenery I know. The smooth heaps of detritus piled high against the mountain sides, the precipitous rocks and crags massed above them, the hideous sterility of the flat-bottomed valleys and mountain flanks, the monotony of light yellow-red colouring, the turbid torrents foaming redly along, and the painful glare from the dusty ground, these were the characteristic features.

The road from the bottom of the Cumbre has led along the broad valley-beds. We have seen no sign of danger anywhere, and can hardly imagine where (if ever) it existed. The steep sides of the saddle-shaped ridge of the Cumbre were soft in some places, and the detritus inclined to slip down a little; but the only possible way of falling there would be by being knocked down by some pack-mule stumbling above you, as we saw them do. On the Chili side we passed two places where I should not have cared to meet a troop of mules with packs on; one of these places was where the path led across a slithery landslide—a path pack-mules never take; and the other place was where for a short distance the path—cut in the face of a bank of rock and earth—overhung a small precipice. But even there, if you feared the packs of mules knocking you down the said precipitous bank, you had but to turn and

wait at a safe spot till they had passed by. In olden days, fording the rivers used often to be dangerous, but now every river is bridged. The valleys on this side of the Andes, excepting at one or two places where the mountain ridges close in, are much broader than those on the other, which deserve more the name of glens, with their uneven and narrow beds, while the bed of this grand valley that for two days we have ridden down is generally quite flat, and of considerable breadth.

At Uspallata there is a custom-house and a guard of fifteen soldiers. There is no regular inn, but several houses, or mud-rooms rather. The trans-Andine telegraph passes by here, of which we took advantage to telegraph to a friend of D.'s at Mendoza to send a carriage for us at a certain point, twenty miles this side of Mendoza, in two days' time. The telegraph clerk gave us a leg of lamb, so with our own food we made a good dinner, and then slept on our saddle-cloths, in a mud-room, on raised ledges round the walls.

Hot ship's cocoa was very acceptable in the cold morning air, and then we rode over a long stretch of gradually ascending plain, sprinkled with small bushes, and the ground tolerably hard. Directly the sun appeared over the hills the heat as usual became quite awful, but on we steadily jogged, nearly baked, crossed a ridge of low hills, then dipped down into a smaller plain, along which we rode at the bottom of an old river-bed, long ago dried up, as all rivers do eventually appear to dry up in this part of the world, leaving deserts where were once cultivation and villages. The road wound between barren sandy banks and yellow hills, where we saw a herd of guanacoës. We passed a worked-out silver mine, and then emerged from the ravines, meandering among these low hills, and rode for some time over the rolling summits of a hill-range, with a glorious breeze behind us, till at last, hurrah! and again hurrah! the Pampas lay far beneath us, stretching away looking level as the sea to the distant horizon. Through

the dark-coloured plain we could faintly see a white streak running—the road to Mendoza; and more vaguely still, far away, the poplars surrounding the town.

Presently we came to an abrupt descent into the head of a deep ravine, down which we trotted gaily, the steep hill-sides green with trees and bushes, numerous troops of mules passing by, or already camping at the side of the stream for the night, until we arrived in the evening at the rancho of Villa Vicencio, thirty miles from Uspallata. Here we had intended to camp out for a few hours' rest; but to our joy we find that since D.'s last visit a posada has been established, where we ate of cazuela and lamb, and then lay down outside the house—visions of insects preventing us going inside—and slept as well as we could, with a half gale of wind blowing down the ravine, bringing clouds of heavy dust.

Boot and saddle at one o'clock A.M., bright moonlight, hilly air, stiff limbs. A gulp of hot wine, however, made us feel better. The second brew of this was spoilt by my quondam messmate pouring in some violently astringent decoction of herbs, prepared by the muleteers for one of us bad with dysentery. And now the moon sunk below the high-peaked crests of the hills, and we rode on, singing and whistling, in the darkness, driving the spare horses and mules ahead of us, twice having some difficulty with them as we passed through immense herds of oxen. A fine effect, as first in the distance and darkness we heard the faint lowing of the oxen and the cries of their drivers, and then the tide of oxen swept past us on all sides, those close at hand alone being clearly discernible, while indistinct mysterious forms brushed past through the bushes around us.

As we trotted out from the widening mouth of the ravine down a long rough slope on to the level Pampas, day dawned in pearly greys and soft pink tints along the eastern horizon ahead of us, and then slowly the sun rose, blood-red and looking three times his natural size, and cut straight by the black land horizon, while the sky overhead became tinged

with crimson, and the snowy Cordillera behind us, and stretching away to north and south, lit up most gloriously. And so we emerged from the mountain ravine, and rode along a soft, white, dusty road, over country covered with tall bushes of several varieties, each, seemingly, scrupulously avoiding touching the other, among which hawks owls, parrots, pigeons, and birds innumerable were flying, singing, and shrieking lustily. We found a parrot's nest with eggs in a bush; and we avoided a spider as large as my hand, which was crawling on the ground. Most of the party were desperately sleepy, and two fairly went asleep on their horses, which wandered about at right angles to their proper course—as sleepy, I imagine, as their riders. But I enjoyed this bit of our journey immensely; the air was as yet cool; the road good—though rather deep in dust; the bird-life around novel and interesting; and on our right, rising like a wall from the level plain, lay the magnificent Cordillera, mountain succeeding mountain, peak following peak along the broken snow-clad line of summit stretching away for hundreds of miles. It was the view I had expected to see sooner, and the scenery I had expected in part to pass through, but excepting (and then only partially) at the top of the Cumbre had seen no sign of until this morning. The Cordillera sink into "meanness" when seen from the Chili side at Santiago, but seen from here at Mendoza, I suppose that no mountain chain in the world beats this in grandeur of form and outline.

About eight o'clock A.M. we saw the carriage with three horses abreast galloping towards us when about eight miles from Mendoza. The worst mounted of us got in and drove rapidly into town, where we arrived about nine o'clock A.M.

Thus ends the first stage of our journey. I hope the next will, anyway, be cleaner, for dirtier I have never been in my life; my face is literally coated with dirt and dust, and sunburnt! ye powers! a brick of Elizabethan date is alone worthy of my colouring, to say nothing of the white

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And so we have crossed the Andes! which sounds a much more adventurous undertaking than it really is. For, as you would have seen had you read this letter, we had no extraordinary length of riding-work in a single day; we slept comfortably every night; we feasted like kings; we had no dangers to encounter—no scraping our dexter legs against a rock-wall, while our left hung over an abyss; no rivers to cross, no snow to wade through. In fact crossing the Andes comes to this, that one rides along gradually ascending glens, with a few steep bits here and there, until one comes to the final ascent of the Cumbre ridge, where in a distance of five miles we ascended 5,625 feet; then we descended sharply a couple of thousand feet or so, and again trotted down very gradually descending valleys.

Perhaps you would like to know how I, a sailor, feel after bumping slowly on horseback a distance of 162 miles? Well thanks, I feel very well, though—unlike the others—I was not riding on sheep-skins, but on an American "McLellan" saddle, to whose shape and softness of seat I ascribe my happy condition. The daily distances we rode sound nothing, but it must be remembered that the heat was always very great, that the roads were not adapted to any other pace than a slow jog trot, that in the above-mentioned distance we did climb up 12,000 feet, and descended again nearly the same height, and that we were up and away between five and six o'clock every morning, jogging along all day till dusk, which to the unaccustomed was undoubtedly wearying, but not so much as to take one iota away from the interest of the journey or our good temper. We had, of course, the immense advantage of having for "Boss" a man who knows the mountains as well as he knows Pall Mall, knows Spanish as well as English, and is hail fellow well met with every man, woman, and child whom he meets on the way, and

with whom he is boundlessly popular. Two of our party were afflicted with dysentery, one of them rather badly; the moral of which is, take ipecacuanha; and also cold cream to soften the blistering effects from the dazzling glare of earth and sky.

Mendoza is a town of considerable size, and the capital of the province of that name. Poplars, vineyards, orchards, and fields of rich green pasture—the alfalfa grass—surround it; these fields being where the oxen are fattened before starting on their trans-Andine tramp. It sounds so nice—poplars, vineyards, fields of tall grass! Yes, but the roads between them are inches—and sometimes feet, I believe,—deep in impalpable dust, high mud walls form the boundaries of every field and vineyard, there is no shade from the fierce heat, and it is only the river flowing by from the snowy Cordillera, and irrigation, which make Mendoza's surroundings look so delightfully verdant.

Standing (or rather fallen) alongside the new town with its good houses, shops, and alameda—with tree-bordered stream running down it,—is the old town of Mendoza in ruins, shattered, broken to pieces, crumbled to the ground in an instant by an earthquake, which only a few years ago, with one or two tremendous shocks laid the whole town low, from the fine old Spanish-built Cathedral to the poorest mud hovel, burying thousands of people in the débris. And there the fallen town lies now as it fell then, scratched and picked only where they sought for the bodies of the dead, many of whom, they say, still lie beneath the mounds of ruins, in as good a grave, I dare say, as they could be given elsewhere. They tell piteous stories of the catastrophe; how, for instance, an Englishman with his little boy rode away in the morning to some other town, but, feeling the shock, turned back to find the town levelled, and his house fallen above his wife and family—death there as everywhere around.

We put up at a small hotel kept by an Italian—Don Joachim, I think; everybody is a Don out here. A

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curious thing that as in the most civilized countries, so in the meanest of civilized countries the whole world round, you find French or Italians keeping the hotels. A few miles from the town the earthquake cracked open the ground in several directions, and springs of delicious water came welling up, forming large pools of some four and five feet deep with sandy floors. The banks surrounding these pools are now covered with tall grass, reeds, and willows ; posadas line their tops ; and by the side of these pools are built grass huts, with steps descending from them into the water, and there we bathed, cleansing and enjoying ourselves immensely. The springs are of different temperatures, some being very cold, and some tepid, so you can choose which you will.

Having belonged to a scientific ship I may mention a subject bearing on Natural History. There is a dreadful insect out here of which we had heard, and had been warned against, as being in body about the size of a sixpence, flat as a wafer with numerous legs, which attacks its victims at night, sucking till from a flat wafer it becomes of the roundness of a large marble. I say that we had heard of this insect, but this morning we saw it in all its dread reality. All night, apparently with impunity, it had sucked at my companion, who then accidentally killed it, and there it lay—an object indescribable !

We had intended to go across the Pampas by the regular coach, but on inquiring we found that a mail-chaise was starting the morning after our arrival, by which we could travel more cheaply and more comfortably. So we took our passages by that, thus avoiding a longer stay in Mendoza, of which we had had more than enough already. Mendoza, by the way, is celebrated for the dry purity of its atmosphere, and here consumptive people might come and live in health and strength ; that is unless, indeed, they were not consumed by the heat, and dust, and *ennui* of an existence in such a wretched country. For wretched it is, and a few dust-covered poplars, vineyards and orchards do

not, in reality, make it one whit less wretched. A desert of bush and cactus-sprinkled shingle surrounds the town, over which you may ride for hours and find no sign of water, no shade, no whisper of wind, no life but the screaming green parrots, the silent little owls, small armadillos, gigantic spiders, &c. And should you, a stranger, meet a Gaucho riding along, you will instinctively feel inclined to keep your hand on your pistol, and your spur pressed to the horse's side; and, haply, having passed the gentleman, you will cast backward glances in case he should send a lasso twirling round your head, or the horse's feet.

Our carriage is four-wheeled; in front is a deep and comfortable seat, just large enough for three people, stowed *à la* sandwich, and sheltered by a capacious hood: behind the seat is a box in which the mail-bags are placed, while our luggage and the mail-conductor's goes on top. We are drawn by four horses, all ridden by picturesquely attired fellows in Argentine dress—loose, white Zouave knickerbockers, top boots, or white linen gaiters, white jackets, and broad-brimmed straw hats. They ride without stirrups, on extremely broad saddles, or rather cushions, made up chiefly of sheep-skins, from which hangs a coiled-up lasso. The wheelers are secured by two lengths of chain, fastened to the pole "on the bight"; in their centres are rings, which are slipped over hooks placed under the saddle flaps. The leaders are attached to the carriage by a long rope, one end of which is fastened to the pole, while the other is split into a fork, and provided with hooks, which are hooked over rings placed under the saddle flaps.

At the appointed time for starting—ten o'clock—we went to the post-office, and waited some time before the mail-conductor was ready. To this functionary we were introduced by D., who, with his friends, comes no further, they going back to Chili by a different "pass," so we shall have to fight our way for ourselves. Don Pépé looks a good old soul, of portly exterior; he promises to take every care of us, pay our bills *en route*, &c. The amuse-

ment of the townspeople loafing about when they heard that we talked no Spanish was very evident. "But how are they going to get on?" they asked, and as Don P  p   knows only a few words of canine French, the answer was indeed rather difficult to make. However, we let them know that we were quite cheerful over our prospects.

At last they say they are ready, though no horses are as yet attached to the carriage, but as soon as we are in they appear with their riders, who simply bend down, pick up the chains and rope, hook them on under their saddles, and away we go at a hand-gallop through the streets of Mendo  a, one of the leading postilions tootling hard at an execrable bugle. When out of the town we continued along a broad road, the horses kicking up dense clouds of dust, while a "whisper of wind" (which I discover to-day is worse than a calm) brought heavy whirlwinds of the same drifting upon us, so thickly as to hide horses, postilions, and all completely.

We change horses every nine miles; sometimes finding them at a rancho, and sometimes the next relay is driven ahead, the old relay going back in charge of small boys who always ride the right leader. Twice it happened that the new relay, which was made up of wild young horses, bolted as we drove up to where they were waiting, and then followed a grand chase and catching with lassos. It is curious to watch the different behaviour of horses under the fear of the lasso. Merely throwing the rope over their backs is often sufficient to bring them to a dead stand-still, fearing the well-known fall if they continue; while other horses when they feel the loop slipping over their heads, dash away, and get a heavy tumble for their pains, felling the postilion (on foot) at the same time, however, and dragging him a bit through the dust. But they won't dash away a second time.

At mid-day we stopped for an hour or so at an inn kept by French people, and the wife inveigled wittily to us against the country as a "pays sauvage." Poor woman, a

change indeed for her, this hot and dusty country after "la belle et riante France." Dust-covered hedges and fields lined the road, and long rows of poplars, during most of the day's distance, throughout which our hand-gallop continued, as did the stifling heat and dust, too much altogether to make it pleasant travelling, till, when near evening, we struck off the white dusty high-road, and galloped over harder ground on a road marked only by the tracks of wheels, tall detached bushes growing on either side, and large hawks hovering close over them. It was very enjoyable now, and rather exciting for a good long stretch, the horses going at a fast gallop, the postilions shouting and cracking their long thonged whips, as we spun along, cutting the cool evening air. Behind us the sun sank below the Cordillera, of which a glorious extent was visible, darkly outlined against the brilliant sky.

Soon after dark we arrived at a large rancho, with deep, brick-paved veranda and rooms opening on to it. The court outside was roofed over with trellis-work, covered with vines, and round about the house were a few poplars and other trees. We found dinner all ready, and partook of it in the veranda with our host, his wife, and pretty daughter. The man was a handsome, dare-devil-looking fellow in his shirt-sleeves, of whom his wife and child appeared in great awe; but he gave us an excellent dinner, dish following dish till I thought the feast never would end. Our carriage is drawn up outside, the postilions sit round their fire by its side, the mail bags are placed under Don Pépé's bed, and we sleep together in a room on three civilized beds. Before we turned in, another mail-chaise drove up from the opposite direction, having for a passenger a six-foot-long business Englishman going to Valparaiso.

The postilions awoke us at dawn, and up we sleepily got, washed in a basin, a performance Don Pépé scorns, drank a cup each of his tea which he carries about with him, and then galloped merrily onward in the cold morning air. The sun as it rose in our faces flushed rosily the

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jagged, snow-clad mountain range, and sent us fast asleep till we awoke to find the carriage drawn up near an estancia, and Don Pépé hailing us in the distance to come and drink milk. In the veranda was a gentlemanly-looking man and his *décolletée* wife, sipping Bolivian tea with a silver pipe out of a black gourd. A little girl brings us a great bowl of warm milk, and then we watched a plunging bullock being lassoed by a man on horseback. Deftly he threw the noose over the horns, and away dashed the bullock full speed, while the horse leant on one side, and when the line suddenly tautened down fell the bullock as if shot, the horse remaining firm as a rock.

They have an odd way of fattening cattle in this country. A number are driven into a corral, surrounded by mud walls; men on horseback then enter and race the cattle round and round as hard as they can, which makes them perspire, and is, they say, conducive to laying up fat. At a farm near Santiago, I went in and joined in a hunt. It was rather exciting, but the blinding dust, the close proximity to your shins of gleaming white horns, the crowds of mounted men dashing about full speed and shouting vociferously, the imminent danger of being dismounted, if not by some freak of your own horse, then by charging bullocks, or by some half-drunken devil of a Gaucho, made me glad to retire as soon and as gracefully as I could.

I suppose there are no better riders in the world than those South American Gauchos. They appear absolutely unable to fall, but their Mexican form of saddles, cushioned with sheepskins, is half the secret of that. To see them in the corrals demi-volte and pursue recalcitrant bullocks which have "doubled," throwing themselves and their horses at the animals in an irresistible manner, and turning them back, was a very pretty sight. On this occasion a bullock, driven wild and blinded by the dust, charged straight at me; I felt helpless and didn't like it; but quick as lightning two Gauchos turned, dashed at the

bullock, and literally seemed to over-ride the beast, and sweep him on one side. How their horses and their own legs do not get constantly gored is a marvel to me ; anyway, I thought I was better out of the corral after that.

On we cantered again, and again we slept. Passing a flock of sheep and lambs in a corral we asked their owner to sell one, so he lassoed a lamb and sold it to us for three shillings. The postilions killed it, and we put it on the carriage to form some future meal. About ten o'clock we arrived at a group of houses, where an inn and shop adjoining were kept by government. Here we breakfasted, and had a rather nasty meal, an armadillo forming one dish, while flies swarmed on the table. The servant was a young American fellow, who told us that when crossing the Andes the other day he had been attacked and robbed. His Chilian guide was killed, but he escaped with a stunning blow, loss of money, revolver, mules, &c. He is now walking his long journey to the railway terminus, and has placed himself, in order to earn some money, in bondage to the old beast who keeps this inn. His pay is twelve shillings a month !

At mid-day the heat was too great to go on ; we stopped for an hour at a rancho, whose owner was a pleasant, handsome fellow with pretty children. The population seems to me much better-looking on this side of the mountains than on the other. The heat is tremendous, quite stifling, and whenever we stop to change horses, flies and musquitos bother us to desperation. The country is very uninteresting, shingly, sandy soil sprinkled with bushes. A little cultivation there is, here and there along the road, and an occasional rancho with perhaps some poplars, and an orchard around it, but as often they stand unsheltered from the sun ; the road is always more or less dusty, though not so badly as yesterday ; and the best thing one can do, as indeed we did, is to sleep away as much of the day as possible. But the mornings and

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evenings are pleasantly cool, and then (particularly in the evenings) we awake, sit up, and enjoy the journey. We get on splendidly with Don P  p  , who treats us like a father, but at the same time with great respect, and we constantly offer each other cigarettes which we smoke continually when awake.

Every now and then we pass trains of great two-wheeled waggons, each drawn by six or eight bullocks on their way to Mendo  a, and often accompanied by a tropa of mules. Lumbering, creaking machines they are, these waggons, with solid wheels of nine and ten feet in diameter, very necessary in this part of the world, where the wheel-ruts are often so deep that the body of the cart must be hoisted high up to go clear of the ground.

A society for prevention of cruelty to animals would have its work cut out in South America. The horses that drag us are often wretched beasts, and their backs and sides are covered with sores from saddles, girths, and spurs. The tightness with which they girth the horses is painful to see, but necessary as the strain of dragging comes all on one side. No sore, no matter how bad, seems to deter them placing a saddle on, and they think nothing of spurring till the beast's side is covered with blood, and altogether these horses sometimes present a sickening spectacle. Occasionally a horse breaks down, chiefly with the heat, I imagine, and then we go on with three only. It is only wonderful how they keep up the pace they do. But, as a rule, the horses are young, strong, though seedy-looking beasts.

In the evening we splashed through shallow pools in which were ducks and long-legged wading-birds ; flocks of parrots flew shrieking past us, and among the bushes we saw large pigeons, tiny doves, hawks, and owls. The country is becoming more uneven ; a distant range of low hills is visible ahead, and the road runs along the dried-up bed of a branch of the Rio Quinto. We passed an Indian family encamped under a waggon, and at eight o'clock arrived at a group of poor huts, lounging about which were

a number of men, women, and pretty little children. They had no food to give us, but the women made a cazuela from a cold chicken among our stores, and the postillions cooked the lamb over their fire; so with the help of our wine we made a good dinner. Warned not to sleep inside the mud room on account of those dreadful insects afore-mentioned dropping from the roof, we slept outside, but that was hardly better, for great beetles came swarming over us in hundreds. They pursued me even when I transferred my apology for a mattress several yards from the hut, and to make matters worse a shower of dust came swishing over me occasionally, and dogs barked at the slightest noise or movement of anything in the vicinity.

Awoke as usual at dawn by the postillions, who already had water boiling, we drank our matutinal cup of tea, and also a bowl of warm milk brought to us by a dear little girl. And then on we went till, soon after eleven o'clock we arrived at the town of San Luis, driving through vineyards and orchards in the outskirts, and then along rough narrow streets between mud houses, when we trundled into the court of an inn, which looked as if it had been guestless for ages. An immensely fat woman was our hostess, and a small boy our waiter. We remained at San Luis all that day and night; why we did so I cannot tell. Words fail me to describe the utter dismalness of this town. Shaky tumble-down houses, some of mud, some of brick; streets inches deep in dust; a large plaza, surrounded in great part by ruined brick buildings; a ring of willows in the centre, and the space within being ploughed by a pair of bullocks. In our wanderings about the deserted streets we came across an Englishman—a runaway sailor, married to a native, and sole postman of the town. "Oh," said he, "if ever you hear of Englishmen going to emigrate here, tell them not to come, not so long as Canada and Australia are open." He was a perfect wreck, having fallen down a well, and broken nearly every bone in his body. However, he appeared happy enough,

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being, according to his own account, held in high esteem by his townsmen. One other Englishman we heard of in the town, the master at a school. After dinner with Don Pépé, the chemist of the town asked us to come and hear some music, so we went to his house, and sat in the court, surrounded by mud walls, and listened to the ladies singing and playing guitars. The *raison d'être* of such a town as San Luis is hard to make out, and the thought of what existence there must be like makes me shudder.

Good beds and sleep. Away at sunrise; going over a heavy road for a few miles, till we turned the flank of the San Luis range of hills, and found ourselves on the true Pampas—a rolling ocean of tufted grass. How glorious it was! a fresh breeze tempering the heat as we rolled along a road marked only by the tracks of wheels, and almost imperceptible at times, though our course lay marked, far away to the green horizon, by an endless line of telegraph posts. Gaily we slashed over the hard ground at a gallop, no heat, no dust, no flies; deer scampering away, herds of cattle browsing, and large hawks sailing in the air. About ten o'clock we arrived at a cluster of wooden hovels, wherein lived fifty soldiers and their wives. One of these soldiers we had previously met, riding in with a dead deer slung across the horse's back. We breakfasted off the remains of the lamb, and the last of our provisions and wine brought from Mendoza. It is worthy of remark that a piece of fresh beef that we had brought from Mendoza was, in spite of three and a half days' interval and the great heat, to-day quite sweet and good. The Pampas, after a long stretch of grassed land, became again sprinkled with bushes; with the addition now of trees, which being all of one kind, with grass beneath, reminded us of Australian bush scenery. At four o'clock we drove into Mercedes, where came to an end the driving stage of our journey.

Villa Mercedes is a small neat town, built chiefly of mud. Around it are the usual vineyards, orchards,

poplars, and some cultivation. It is the headquarters of the "Indian frontier line," and present terminus of the railway which will some day go to San Luis, Mendoza, and across the Andes. Five or six hundred soldiers are barracked here to guard the country from Indian cattle-lifting raids. Slatternly, scowling-faced ruffians these soldiers are, and their chief occupation, so we were assured, is thieving; which profession also absorbs the mind of the general population. For the soldiers there is some excuse, since they seldom get paid, and they must live somehow. The married soldiers live in little mud hovels, hardly large enough to turn round in, and the others in barracks. We put up at an excellent little inn kept by a cheerful Frenchman, where we got capital food, wine, and beds. It was very well for us that the hotel was so good, for to our dismay we found that no train was going to leave till the third day after our arrival. And there, in this mortally dull little town, we had to vegetate in the interim as best we could. The second day was enlivened for a few minutes by the arrival of the coach from Mendoza, and mighty glad we were that it had not carried us across the Pampas; anything more cushionless, wooden, and hard-looking in the vehicle line I never saw. The third day was enlivened by the arrival of a train at the station, a mile distant from the town. It brought a relief of troops and gave us something to look at. A brood of young ostriches occupied the platform, as did also a great swell in uniform, who we thought must be an Argentine general at least, but it turned out that he was only a German railway official.

At last came the morning on which we were to leave; we drove to the station, got into the train, and steamed away on this the third stage of our journey in a very comfortable carriage of American fashion. Don Pépé is still with us in charge of the mails, and in our company are several ladies talking French. Slowly we roll over the level and grassy Pampas, so slowly as to make one laugh at this

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new notion of "railway speed;" but it was very pleasant, a shower in the morning had laid the dust, the air was cool, and we saw ostriches, deer, partridges, flamingoes, and other birds. The ostriches and deer were very tame not running away till the train was close on them. At two o'clock we arrived at the town of Rio Quarto, and the train that day went no further.

Rio Quarto was half a mile from the station. We walked about it in the afternoon, and returned much impressed with its dead-alive and deserted appearance, with its dusty streets, and with its generally forlorn look. It ranks next, however, to Mendoça in our estimation, and becomes even a fine town in comparison with San Luis. The station was a good building with hotel attached, where we got an excellent dinner, hearing English spoken all round us by railway *employés* of every rank.

Next morning the train started at six o'clock, and on we slowly rolled again over the Pampas, arriving at Belle Ville at ten o'clock, where we breakfasted in company with a crowd of passengers going to Cordova by a branch line. At noon we changed carriages at Villa Maria, an English guard in charge of our new train, while we hear English spoken, and see English fellows with the inevitable dog, on all sides. After Belle Ville, cultivation and cattle-farms line the railway, the country flat as a board in all directions, and innumerable small burrowing owls sitting by their holes on the ground. At seven P.M. we arrived at Rosario, where we lodged at an admirable French hotel, and washed, and had our hair cut, and got new booted, new hatted, and tried to look like Christian gentlemen again.

Rosario is built on the great Rio Parana; by which river we are now to get to Buenos Ayres. The following day at two o'clock we went on board a river-steamer; and all that day and night steamed down the river, which is very broad, with low banks, and the scenery consequently quite uninteresting. The boat was full of passengers and very comfortable. The next morning we were in an off-stream, narrow canal-like stretches of still water running

between banks fringed with tall grass and trees. The turnings of the stream are sometimes so sharp that the steamer's bows are run into the bank and the current allowed to swing her stern round, when on she goes again very slowly, with willow-branches brushing the tops of her paddle-boxes on either side—so narrow are these lanes of water. About midday we stopped at a pier, wherefrom a railway carried us in two hours to Buenos Ayres.

On the evening of the next day we embarked on a steamer, and steamed down the river Plate during the night, arriving at Monte Video early on the following morning. There we found our mail-steamer anchored off, and by her—the *Britannia*—touching *en route* at Rio Janeiro, Lisbon, and Bordeaux, we came HOME!

And the *Challenger*? She meanwhile, on the 11th of December, had left Valparaiso, and, steering through Smyth's Channel and the Straits of Magellan, was, on the day we left Monte Video, within a few days' sail of the Falkland Islands. In the straits they discovered a remarkable ancient kitchen-midden situated on Elizabeth Island, a few miles to the eastward of Sandy Point, where is a Chilian settlement, near to which alluvial gold is found in some quantity, and is, of course, being worked. Elizabeth Island is separated from the mainland by a channel of about one mile in width. Sylvester Point, off which they anchored, is surrounded by a low ledge about fourteen feet above high water, and this ledge was occupied by an immense rookery of small black-headed tern. On the south-east shore the sea had eaten into this bank to a height of about fourteen feet, exposing for over half a mile along the shore, heaps of bones, shells, stones, and rubbish covered in most places by a foot of soil. This proved to be an ancient Patagonian or Fuegian kitchen-midden, and digging into it they found the bones of all the animals, cetaceans, and birds which now live round about, or in, the Straits. There were the bones of guanacoes, of a small rodent, of sea-lions and other seals, of whales and porpoises, of penguins, rheas (South American ostrich), terns, shags, &c. Some of these

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bones were charred, some were split, and some were fashioned into awls and needles. Besides these they found arrow- and spear-heads, and knives rudely made of chert. Bolas also were picked up, which were well rounded, with grooves cut round them, in which to secure the string by which they were thrown. Strange to say not a single fish-bone was found. This midden rested on a bed of very fine sand of about six feet in thickness, and that, again, on blue glacial clay.

Judging by these kitchen-middens it seems more than probable that at the time they were formed this island was connected with the Patagonian mainland. The island is only about seven miles in length by one and a half broad, and therefore much too small to have maintained numbers of guanacoës, &c.; and one can't suppose that the natives would take the trouble to bring them from the mainland to the furthest-away point of an island lying off it. Besides which, the sand on which the middens rested does at present nowhere fringe the shores of the island, though there are long beaches of fine sand on the mainland close by. As to which race of natives—Patagonians or Fuegians—made the middens, the answer would seem to lie in the fact of bolas having been found, which, it is said, the Fuegians do not know the use of.

The *Challengers* were disappointed in seeing no Fuegians, not even a glimpse, such as we in the *Zealous* were blessed with, when a canoe full of shivering, cowering, naked savages—men and women—came paddling past us, shouting and shrieking with amazement as the great ironclad swept full speed by them, and at which one man jokingly fired an arrow! They met with rookeries of penguins, terns, and fur-seals; shot geese and ducks; fished with fly¹ in brawling streams and caught fine trout by dozens; and on the 18th January, 1876, they arrived at the Falkland Islands. This colony appears to have gone ahead wonder-

¹ As it has been said that fish in the Straits' streams do not take the fly, let me inform navigating fishermen that at Grey Harbour, Messier Channel, they will find exciting sport in the fresh-water streams there.

fully since even when I was here in 1866, and this prosperity is due mainly to the introduction of Cheviot sheep, which in the wet climate prevalent here do better than any other kind. The "Falkland Island Company" own half the land, and a few proprietors the remainder. These have brought out, to look after the sheep, a number of young Scotch shepherds, who live together in a settlement, and have a church, minister, schools, &c. The sheep are found to pay better than cattle, and the great herds of wild cattle and horses which roam over the islands are being rapidly killed off. These Scotch shepherds have learnt to rival the South American Gauchos in throwing the lasso and bolas from horseback. And when I tell you that in the chief settlement there is a Governor, a detachment of twenty marines, a doctor, an English and a Roman Catholic church, a bishop, a small theatre, and "stores," you will understand what an amount of civilisation exists in these bleak, cold, rainy, stormy Falkland Islands.

You may remember that the country consists almost wholly of undulating moorland, coarse grass, moss, and a stray shrub here and there growing on peat soil. Through this country—called by the inhabitants "the camp"—there are no roads, and the travelling is all done on horseback. "Upland geese" abound, as do also snipe; the first being easily shot. On the shores the rock-geese and the logger-headed ducks are very common. There, also, are rookeries of "jackass" penguins, which burrow into the ground, building their nests six feet deep in the soil. It is a curious act that inside these penguins, remains of fish were found, while inside those which had hitherto been met only small crustacea were discovered, in addition to the large pebbles which penguins universally seem to appreciate. Query, do they swallow these as ballast? Fur-seals are also caught around the shores.

Some portions of the land being wetter than others, the inhabitants divide the camp into the wet and dry. The wet camp occurs where the rock is quartzite, and the dry camp where the rock is slate, which brings us to a subject

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that has puzzled geologists. In the "wet camp"—where the quartz rock crops up—the country is covered with enormous angular stones from the weathering of the rocks. In most places these stones are now covered by soil, but over some parts of the land they lie on the surface in streams. One such "river of stones" is uninterrupted for the breadth of a mile. One theory accounted for these "streams of stones" in earthquake action—an oscillating movement of the earth's surface shaking them into long bands. But the *Challengers* found what they supposed to be a simple explanation of the phenomenon, viz., beneath these "streams of stones," far down, run streams of water, which prevent the soil from accumulating over the stones, while over the country where streams do not run, there stones, equally numerous, are hidden beneath the soil. In spite of the prevalent cold wet climate, the inhabitants all declare that it is most healthy, and that sickness is almost unknown. Guanacoës and hares have been introduced and are thriving; and altogether this out-of-the-way group of islands has become one which it is well worth while for England to have in her possession.

On the 6th of February the *Challenger* left the Falklands and went to Monte Video; thence she proceeded towards Tristan d'Acunha. On these two last sections they struck that bottom-current of cold water which we found under the line, and which we had missed when sailing from Bahia to Tristan on account of our hurrying south to avoid yellow fever. The minimum temperature now registered was 31°, a colder temperature than any which had been obtained before, excepting in the immediate neighbourhood of the Antarctic regions.

From the neighbourhood of Tristan d'Acunha the ship sailed to Ascension, whence she proceeded to Porto Praya, St. Vincent, and Vigo, and arrived at Spithead on the 24th May, 1876. And so ended the cruise of the *Challenger*.

CHAPTER IX.¹

CONCLUDING NOTES.

A FEW words as to the *Challenger's* work, and how she did it. Her work was (as the *Times* put it) "to be of three or four years' duration, during which soundings, thermometric observations, dredging and chemical examination of sea-water should be carried on continuously, with a view to the more perfect knowledge of the physical and biological conditions of the great ocean basins, and in order to ascertain their depth, temperature, specific gravity, and chemical character, &c." In addition to all this the naval scientific staff (commonly called surveyors) would survey any unsurveyed harbour, or coast-line, which we came across, or re-survey old work, and take a daily chain of magnetic observations round the world.

With this view H.M.S. *Challenger*, a large main-decked corvette, was commissioned by Captain Nares, in November 1872, with a reduced complement of officers and men. She carried also a civil scientific staff, consisting of five gentlemen, three naturalists, a chemist and physicist, an artist and private secretary to Professor W. Thomson, who was the head of this civil scientific staff. I need scarcely say that to us, of course, fell the practical working of the list above, while theirs was to examine, to draw, and describe, to bottle in spirits the animals and mud, and to examine chemically the water from the bottom and intermediate

¹ Throughout this chapter I am indebted for information to published reports, written by Staff-Commander Tizard, R.N.; Prof. Sir Wyville Thomson; the late Dr. R. von Willemöes-Suhm; Mr. Moseley; Mr. Buchanan; and (particularly) Mr. Murray.

depths of the sea which we obtain by means of the sounding-rod, dredge, trawl, and water-bottles.

The naturalists had their analysing room, the photographer his "dark-room," the physicist his little laboratory, and the surveyors their "chart room," on the main deck, which was deprived of its guns, excepting two 68-pounders—which were never fired. On the lower deck was our mess-place (ward-room) and cabins. On the upper deck, abaft, was another analysing room, devoted to mud, fish, birds, and vertebrates generally; also an instrument for finding the magnetic dip, &c.; a donkey-engine for hauling in the sounding, dredging, and other lines; a broad bridge amidships, where the officer on duty carried on the peculiar duties attached to the operations of sounding, dredging, taking "serial temperatures," and procuring bottles of water from any required depth. Forward in the bows were reels and boxes on which were reeled and coiled the sounding and dredging lines. While, not to be forgotten, there was a large sheep-pen on the main deck, and various contrivances for the stowage of fowls and ducks.

We carried thousands of fathoms of rope of different sizes for dredging and sounding; many tons of sounding "weights," of one cwt. each (afterwards, as being more convenient to handle, of half a cwt. each); dozens of thermometers—of peculiar construction—for deep-sea temperatures; hundreds of gallons of spirits to preserve whatever we might get from land and sea; numerous dredges, as also trawls, both "beam" and "otter;" water-bottles, and aquariums—which last proved failures.

The sounding instrument ("Hydra") consisted of a long hollow metal rod with a ring at one end for attaching the rope to, and "butterfly valves" at the other, to prevent the mud inclosed from falling out again. In the centre of each weight—thick discs of iron—were holes, through which the rod was placed; and these weights were hung by a stout wire passing under the lowest one, and over a button fixed near the top of the rod, the tension of the heavily-

weighted wire at the same time pressing back a spring through a hole in which the button protruded. Directly that the weights touched the bottom they were lifted up, the tension was taken off the wire, the spring pushed it off the button, the wire fell, the weights slipped off, and the light rod came up alone with its lower end plugged with the mud in which it had sunk.

This was the first instrument used, but it was superseded by another ("Baillie") in which the spring is done away with—the wire being passed over two projecting "shoulders," which the rod on striking bottom "elbowed" off in the act of being forced upwards.

For every estimated 1,000 fms. of depth a weight of 1 cwt. was allowed, so in deep-sea sounding 3 cwt. of iron was usually left at the bottom of the sea to mark our track round the world, and puzzle posterity.

In depths over 1,000 fms. the weights were always "slipped;" but in depths under that a different and simple form of weight was used, which the rope was strong enough to bear back to light again with ease.

Rope was always used for our soundings, and besides the sounding instrument, two or three thermometers and a water-bottle were attached to the line close above it. Rope, speaking generally, may for sounding purposes now be considered obsolete—wire being employed instead. For simple sounding-work wire has every advantage over rope; for in the first place a very small weight in proportion to that which is required with rope takes it to the bottom, and also that this weight, except in very great depths, can be hauled up again—thus avoiding carrying many tons of iron-weights, as we had to do. Another great advantage which wire has over rope is, that should it happen to pass through a current, the water acting on so small a surface will not "bag" the wire to the same extent as it would rope, and therefore the line when it gets to the bottom will be more "up and down," and consequently the sounding will be of greater accuracy. The objection to wire in our

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case was that every time we sounded, two thermometers and a heavy water-bottle, in addition to the heavy metal sounding-rod, plugged with mud, had to be brought up again to the surface, and to do this work constantly wire could not be trusted. The time taken in sounding with rope and heavy weights, against wire with a light weight, is about equal.

The sounding lines were marked at every 25 fms. As the line ran out the time was taken as every 25 fm. mark entered the water, and as the weights sank deeper and deeper, so, of course, in gradually increasing ratio, the "time-intervals" between the marks entering the water became greater, till by a sudden and decided increase in lone time-interval the weights were known infalibly to have struck bottom, and though the line would still continue to run out if allowed to do so (thus it was in out-of-date deep-sea soundings when "10,000 fms. and no bottom" were gravely registered), the order was at once given to bring the line round the drum of the donkey-engine, and to heave up. With a weight of 3 cwt. it took rather less than one hour to get bottom in 3,000 fms.

The greatest depth we ever found was in the North Pacific (between Admiralty Island and Japan, see map)—4,475 fms. (26,850 feet), not far off the height of the highest mountain in the world. From this depth we got a large bottle full of mud. The Americans have registered a doubtful sounding of a somewhat greater depth than that, but its accuracy is rendered uncertain by the fact of no mud-proof of bottom having been struck, coming up.

The North Pacific would appear to exceed all other oceans in depth.

Our dredges were made of small rope, closely worked, and had oblong iron mouths; to the bottom of the bag a bar of iron was made fast horizontally, and at short intervals along this bar "swabs," to the number of four or five, were hung. Swabs, I must add, are what are used on board ships for drying up wet decks, and are simply long

bundles of unlaidd-up hemp. Science has called them by the more suggestive name of "hempen tangles." These sweep the ground behind the dredge, and often catch animals which the dredge fails to bag. But after a while the dredge was rarely used, excepting where rocky ground was discovered by the sounding-rod, a "beam-trawl" being employed instead, which, having a far wider sweep, cut the dredge out altogether, and had the immense advantage of catching fish and other swimming creatures, and only bringing up a little mud, whereas the dredge, from its small size, could not do the first, and from the closeness of its mesh gave us much more mud than even science wanted.

I may here say that, excepting on one occasion, the trawl never assisted our *cuisine*. Trawling in 3,000 fms. is not the same, as far as results go, as trawling on the English coast in 60 fms. If fish did come up, which they did in numbers between none and nineteen, they were all invaluablely rare, or of totally new species—fit only for the delectation of science, not for the hungry sailor. Only once did our bill-of-fare include the results of our work, and that was when, off Australia, a great haul of shrimps was made. These, for once in a way, were handed to the cook, but it must be confessed that there was a watery nothingness about their texture, which was highly disappointing.

In deep-water trawling, about 700 fms. of rope in excess of the actual depth was allowed, and so it constantly happened that we had six and seven miles of rope over the ship's side. At a distance of 300 or 400 fms. from the trawl a "toggle" (*i.e.* a stout small bit of wood) was lashed across the rope, and when the requisite length of line had nearly run out, heavy weights were secured to the rope in such a manner that they ran down its five, six, or seven miles' length, till stopped by the toggle, where they dragged at or near the bottom, and so kept a long length of rope immediately ahead of the trawl at a horizontal tension, and the trawl itself steadily dragging.

The greatest depth we ever dredged in was 3,875 fms.

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(4.4 miles), and the deepest we trawled in 3,025 fms. But depths of and over 3,000 fms. may almost be called exceptional the whole world round, and only once did we find a depth of above 4,000 fms.

Deep-water trawling is merely a matter of time and strength of material. There is no depth yet found in which we could not have trawled, granted the time to spare, and strong material. In these tremendous depths of course the apparatus sent down, whether trawl or dredge, should be of small size, so as not to contain too much of whatever kind of material it may scrape along. On one occasion the trawl—from 2,350 fms.—brought up about half a ton of manganese nodules; on another a great iceberg-dropped stone weighing a quarter of a ton; and on another the trawl was so filled with, probably, these manganese nodules, that though at the imminent risk of the rope breaking every minute, we brought it safely to the surface, an iron swivel broke with the weight directly the buoyant power of the water was gone, and we lost the trawl. And, of course, the greater the depth the greater is the risk in bringing these great weights up.

Whenever we sounded, the temperature of the sea was taken down to 1,500 fms., at every 10 down to 200, and from there only at every 100. Latterly the temperature was taken at every 100 fms. from the bottom (whatever the depth) as well as at the surface. A weight of 50 lbs. was used as a sinker, and the thermometers (at first) secured to their places, to the number of seven and ten at a time. But the work is so risky, and so many thermometers were lost, that, afterwards, only two or three were lowered at a time, which added to their safety, but also to the time employed in ascertaining the temperature of the sea. The temperatures need only be taken down to 1,500 fms. because at that depth the temperature is nearly always, within two or three degrees, the same as it is at the bottom. The line used for taking the "serial temperatures" is quite distinct from that employed in ascertaining the depth.

The strain on the dredge-rope was indicated by an arrangement called an "accumulator," consisting of a number of long, stout india-rubber bands, their ends "toggled" through holes in two strong discs of wood. The upper disc is secured to the "yard-arm," while beneath the lower one a block is attached through which the dredge-rope rove. As the strain comes on the rope so the india-rubber bands stretch, forming a true pulse, whereby was known exactly how to treat the rope and the trawl at the end of it—whether to heave up boldly, carefully, or to stop altogether. When the accumulator stretched its fullest, as it often did, and snap! snap! went some of the india-rubber bands, that was a signal to "stand clear!" for it meant a tension on the rope of many tons' weight. The dredging-rope was of admirable and special manufacture, and the heavy strain it underwent was visible in its life-blood—the tar—oozing and dripping out along its many miles of length. Accumulators, formed of only a few india-rubber bands, were used for the sounding and temperature lines, which, being much smaller than the dredge-rope, and bearing precious burdens of thermometers and water-bottles, required a more sensitive indicator of the tension on them.

At the same time that the temperatures were being taken, samples of water from different depths were obtained by the water-bottles attached to another line, hanging from another yard-arm. These bottles were invented by the *Challenger's* physicist, and consist of metal cylinders furnished at both ends with stopcocks. The levers by which these stopcocks are opened or shut are connected by a rod outside the cylinder, so that they operate simultaneously. This rod, again, is fitted with a metal plate, which, being kept in a vertical position by the upward pressure of the water as the bottle descends, at the same time keeps the rod in such position that the stopcocks are open, allowing a free run of water through the bottle. When the required depth has been attained

and the bottle is being hove up again, the action is reversed—the metal plate falls in a horizontal position, and the downward pressure of water acting on it, forces the rod down, and closes the stopcocks, enclosing the water from exactly that depth at which the bottle ceased to descend.

But, like the fish which come to the surface all blown out and burst, this bottle would, too, be burst if a small safety-valve were not fitted, to allow of the escape of the surplus water, which, owing to the greater density of the water below the surface, it has enclosed in excess of what it can hold at atmospheric pressure and temperature.

The bottle for obtaining specimens of the bottom-water is of different construction and Swedish invention. It is much heavier than the other, and consists of a metal cylinder working up and down a central rod. The top and bottom of this bottle are discs of metal fixed to the rod. The movable outer case of the bottle is lifted up and hooked by a string passing over a hook fixed to the top of the rod, and working on a central pivot, the tension of the rope keeping the hook in such a position as to catch the string. As soon as the sounding-weights touch bottom, the tension is taken off the rope, and the hook turns over, releasing the string, when the outer case falls down into its seat, enclosing the bottom water.

The actual work was always carried on under steam, as of course it was essential for the soundings and serial temperatures, that the ship should keep exactly stationary, which was easily done under steam, keeping her head to wind, with the assistance of the "spanker." On a dredging day the usual routine was this:—In the early morning—5.30 A.M. (steam having been got up during the night) the sails were furled, the ship put head to wind, and the depth ascertained. As soon as the line was hove up again (when the thermometers were read off, the water-bottle taken to the laboratory, and the mud from inside the sounding-tube extracted) the ship was put before the wind, the trawl lowered over the side, and the line allowed to run

out to the required length (by which time the ship might have run five or six miles away from where the trawl was lowered, and which had only sunk a few hundred fms.), when the weights were put on, and allowed to slip down to the "toggle" aforementioned. The ship was then again brought head to wind and stationary, and the serial temperatures taken—a long, long job; the trawl in the meantime, with the assistance of the weights, sinking rapidly to the bottom. When the temperatures were finished, the ship was placed broadside to the wind, so that as she drifted the trawl might scrape along the bottom. And this was the time when the "accumulator" was anxiously watched, for if it showed an undue strain on the rope, then was it necessary to steam up to the trawl, or else good-bye to it for ever. After two hours or so of dragging, the line was hove up, the ship again steaming head to wind towards the trawl, so as to get as much an "up and down" pull, and lessen the tremendous strain as the trawl was dragged, at the other end of a rope three or four miles long, over the bottom. If all went smoothly, and no excessive weight was on the rope, the little engine hove it up at the rate of 900 or 1,000 fms. per hour.

A "field day," as we called a dredging day,—as distinct from a day on which we only sounded and took serial temperatures—consumed, when dredging in deep water, from ten to twelve hours. The blue-jackets called the operation by no other name than "drudging," which, however, was not necessarily meant as satire, though it did convey their, and most of our, feelings!

Excepting in a prolonged calm, when, if we had coal to spare, we steamed slowly on our way, our voyage was done entirely under sail, for as we carried only about 240 tons of coal, that left but a small margin beyond what was required for the constant sounding and dredging work. And therefore it was that the combination of dull sailing, together with stopping at some every 200 miles

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for a whole day, made our cruises at sea very long and wearisome. But it must be said for the "old *Challenger*" that she was very comfortable, and a better sea-boat I never should wish to sail in.

I have said that deep-water trawling is merely a matter of time and strength of material. I mean that it is so to us sailors; for, of course, the first requisite of success is that the ship should be properly handled. But granted that, even then it is not at all plain sailing. Many a time the trawl came up having apparently never touched bottom, though the conditions, and the way it was worked—length of rope paid-out, time given it to drag, &c.—were seemingly precisely the same as on those occasions when it came up full of animal life, or of mud or stones from the bottom. At other times some sub-surface current would seem to have caught it, and it came up all "foul"—the rope twisted into hopeless knots, and the net wound round the rope above in an upside-down position. Then, again, sometimes it stuck at the bottom, why or wherefore no man could say, but probably because it got so choked with large nodules of peroxide of manganese as to make the weight too great for the rope to bear, and there was nothing to be done except lose the two or three thousand fathoms of dredge-rope.

Perhaps next to the depth of the oceans, the discoveries we made of the deposits on their beds are, as bearing on geology, of the most general interest. But I must first just point out to you how much deeper are the average of land-depressions below the sea-level, than are the land-elevations above it. The average depth of the one is about 14,000 feet; and the average height of the other only 800 or 900 feet. In all the oceans there are vast areas where the surface of the globe sinks fully three miles below the average height of the land. The deepest "troughs" appear to run along parallel to the continents, which circumstance would seem to be related to the fact that all mountain chains run parallel to the great ocean basins. The map

shows the soundings we found, and also the character of the deposits.

The last require some explanation. *Shore deposits* are formed where their name indicates their origin. *Organic deposits* include globigerina, radiolarian, and diatomaceous oozes, and it is when the deposits contain these organisms in vast and preponderating quantity that they are called by these names respectively; and the *clays*, coloured red and grey, are only found in depths above 2,000 fathoms.

To take these clays first, as they form (*vide* map) by far the most abundant oceanic deposit. They appear to be formed in the same manner as land clays are, viz., by the decomposition of feldspar—sufficient sources of which we find in the volcanic débris scattered over the ocean's bed.

Of all the forms of volcanic débris, pumice-stone is the most common. The trawl has frequently brought up bushels of these pumice-stones, from the size of a pea to that of a foot-ball. As might be expected they are most numerous near volcanic centres, from which they may be thrown into the sea by a shower, or else get carried by the numerous rivers which flow over, and cut their way through the beds of pumice-stone, and other volcanic débris, to be found in all quarters of the globe. Once in the sea the débris may be drifted hither and thither away from the coasts by currents.

Another form of volcanic débris is tufa—dust and ashes carried to the areas where we find them by the winds blowing over the volcanoes' craters.

We have found, too, sometimes many hundred miles from land, small pieces of obsidian and basaltic lavas, to account for whose presence there, a submarine eruption would appear to be the only solution.

Next to the clays, globigerina ooze is the most abundant oceanic deposit. The globigerina shell is a foraminifer, which is found everywhere teeming on, or near, the surface of the sea. But these foraminifera are, of course,

most chiefly numerous where the conditions of the water are favourable to their existence,—in warm, salt seas, where carbonate of lime is held in solution. This carbonate of lime the foraminifera secrete, forming shells outside a speck of living sarcod. And of all foraminiferous shell-forms, the globigerina are the most common, living in vast numbers in the open sea, particularly in temperate and tropical regions.

Like every other living thing, foraminifera are born and die, and dying sink to the ground, raining slowly, ceaselessly, down from the upper waters of the ocean, through intervening miles, till they find their grave at the bottom. All through the ages these organisms have lived and died in the sea, forming deposits of vast thickness, known to the now dry land as *chalk*. It was thought before our investigations that these organisms *lived* at the bottom, but never once did we find them undoubtedly doing so; on the contrary, we found them clouding the upper waters in a living state, and clogging the dredge with their dead skeletons at the bottom.

We have found this ooze at depths from 250 to 2,900 fms.; and it is notable that the ooze now forming in shallow depths (say under 1,000 fms.) resembles chalk more nearly than that which is being formed in deeper water. The absence of calcareous shells, such as the foraminifera, at the bottom in very deep water, is accounted for by the carbonic acid held in solution decomposing the lime which forms their skeletons. In the tropics, where these organisms are most numerous, there, too, are globigerina deposits found at the greatest depth—the lime, in short, held in solution preponderating over the acid held in solution.

Radiolaria and diatoms, which give the name to the remaining “oozes,” are found to abound on the surface and in the deepest waters of all the oceans. But it is where the specific gravity of the water is low, from the intermixture by various causes of fresh water, that these silica-secreting organisms oust the foraminifera—the lime-

secreting, and high specific gravity-loving, organisms—to so great an extent that their dead skeletons rise to such prominence at the bottom as to be characteristic of the deposit. Our deepest sounding was on partial “radiolarian ooze.”

Far south in the Antarctic Ocean, where icebergs, and snow, and sleet, cause the specific gravity of that sea to be very low, these diatoms abound on the surface; and there, too, is diatomaceous ooze found at the bottom.

We must return to the clays, as they are intimately connected with the remarkable and unexpected discovery of a mineral—manganese—evidently forming at the bottom of the sea.

The occurrence of this manganese I have first mentioned on page 15, where it was found coating a quantity of dead coral. Since then it has been found in immense quantities, chiefly in the Pacific. In these clays furthest from land, sharks' teeth, ear, and other bones of whales, are very frequently found, all these having a more or less thick coating of peroxide of manganese. This, in the form of minute grains, concretions, nodules, &c., occurs widely distributed in ocean deposits. It is most frequently found in the clays, but has been met in other deposits in depths above 200 fms.

The nodules vary from little pellets to masses of several pounds in weight. In some regions everything at the bottom, even the bottom itself, would appear to be overlaid by and impregnated with this substance. Sharks' teeth of all sizes (many gigantic, one was 4 inches across the base) are frequent, and are sometimes surrounded by concentric layers of manganese of nearly an inch in thickness. A siliceous sponge, bits of pumice, radiolaria and globigerina, and lumps of clay have all been found forming the nuclei of these nodules. We have caught in one haul, where there has been no reason to suppose that the trawl has sunk more than two inches in the clay, over 600 sharks' teeth, 100 ear-bones of whales, and fifty fragments of other bones,

some imbedded in manganese an inch thick, some with only just a trace of manganese on them, and some with no trace at all. These sharks' teeth are *fossil* teeth, the same as are found in great quantities in tertiary formations, particularly in Switzerland miocene deposits.

As we have every reason to believe that the aggregation of the manganese is a very slow process, the occurrence of these teeth and bones, some imbedded deeply, and some not at all, in the same surface-layers argues strongly in favour of an extremely slow rate of deposition.

On the other hand, the occurrence of sharks' teeth in shore deposits is extremely rare, and in the organic oozes only slightly less so. This might be expected, as shore deposits accumulate faster than organic deposits, and they again faster than those deposits forming far away from land, and in great depths.

Now as to the source of this peroxide of manganese. We have seen that the bottom of the deep-sea is covered with a deposit of clay, formed by the decomposition of volcanic *débris*. Wherever we have pumice containing much magnetite, olivine, augite, or hornblende, and these apparently undergoing decomposition and alteration, or where we have great showers of volcanic ash, there also is manganese in the greatest abundance. The correspondence between the distribution of these two may therefore be regarded as very significant of the origin of the latter. Manganese is as frequent as iron in lavas, and in magnetite, and in some varieties of augite and hornblende peroxide of iron is at times partially replaced by that of manganese. It is therefore probable that the manganese, as we find it, is one of the secondary products arising from the decomposition of volcanic minerals—that decomposition being caused by the carbonic acid and oxygen of ocean waters.

To sum up, then, the sources of the different ocean deposits :—That within 200 miles of land is brought by rivers, and resembles the sedimentary rocks of geology.

Some of the substances in solution, as carbonate of lime and silica, are extracted by animals and plants to form their shells and skeletons; these last falling to the bottom, form the different "oozes," found, also, in deeper water.

North and South of the parallels of 40° N. and S. latitudes, land *débris* is deposited by floating ice.

The clay is chiefly derived from volcanic *débris*; and in the N. Atlantic part of it may be derived from the feldspar contained in the "red dust" which comes blowing over from the Sahara.

Other conclusions have been arrived at, viz.: that the "red earth" of Bermuda, Bahamas, Jamaica, and other limestone countries, is most probably derived from the decomposition of volcanic rocks and minerals present in the areas where the nodules of manganese are found; that the many minute particles found far from the land of native iron—some of which are spherules—have probably a meteoric origin; that the peroxide of manganese depositions in the deep sea are different in structure and composition from known ores of manganese; and that there do not appear to be equivalents of the rocks now forming in the deep sea far from land, in the geological series, which would seem to show that the present great ocean basins have ever been great ocean basins, and probably that the great continental areas have always been the areas on which continents have existed. In other words, we have found no evidence that the sea now rests on what were once continents in the tertiary, or any other geological, period: which, if true, would do away (in the ocean nearest home) with the submerged "Atlantis,"¹ that attractive bone of contention.

Before I leave the subject of deep-sea deposits, I must, in gratitude, record how under the fierce glare of the tropical sun, with no colder water procurable than the

¹ One fact, which has helped this theory, is that the animal-forms on the African and West Indian shores are almost similar, if not identical. But we found the larvæ of molluscs, echinoderms, and annelids, being carried across from shore to shore by the equatorial current.

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temperature of the air would allow, we cooled our wine in the ice-cold embrace of mud procured from the depth of miles—so cold as to be painful to the touch, but gratifying in every way when imparted to sherry, champagne, or beer.

Concerning ocean circulation, it cannot be said that the enormous amount of data collected by us has had the effect of making the "doctors" agree. On the contrary, the facts which we have ascertained prove the truth of all the totally different theories as to the true causes of the movements of the ocean's waters. Dr. Carpenter sees on all sides confirmation of the theory, that a general vertical circulation takes place owing to differences of specific gravity due to temperature, while Professor Sir Wyville Thomson "sees not the slightest ground for supposing that such a thing exists, but is every day more fully satisfied that the influx of cold water is to be referred to the simplest and most obvious of all causes—the excess of evaporation over precipitation in the northern portion of the land hemisphere, and the excess of precipitation over evaporation in the middle and southern part of the water hemisphere."

The facts relating to ocean circulation are easy enough to grasp; what causes these facts is quite another matter. In the first place no one doubts the one great fact, "the bottom water of the Atlantic and Pacific is an extremely slow indraught from the southern sea. That it is moving, and moving from a cold source, is evident from the fact that it is much colder than the mean winter temperature of the area which it occupies, and colder than the mean temperature of the crust of the earth; that it is moving in one mass from the southward is shown by the uniformity of its conditions, by the gradual rise of the bottom temperature northwards, and by the fact that there is no adequate northern source of such a body of water."

The upper 500 fathoms of the oceans are affected by currents produced by the winds, and, in different degree,

according to the latitude, by the direct action of the sun, which, however, even in the tropics, does not appear to affect the temperature of the sea below 60 or 80 fms.

The tabulated lists at the ends of Chaps. I. and VII. will show you how the temperatures of the different oceans vary down to 1,500 fathoms. The temperatures at the bottom depend entirely upon what depth they are open to the deep bed of the Antarctic Ocean, where the temperature is about 30° ; but should a barrier intervene, then over that, only water whose temperature corresponds with the height of the barrier can flow into the basin beyond. Thus it was then in the greatest depth we ever found, the temperature of the bottom-water was the same as at 1,500 fathoms; so also in the basin-seas we sailed over to the west of the New Hebrides; so it is in the Mediterranean, where below 100 fathoms the temperature remains the same to the bottom; and so it is in portions of the two Atlantics, depending in every case on the height of the basin's rim above the bottom—outside it.¹

But of this I must speak more particularly. Starting somewhere from the deep bed of the southern sea, a ridge of hills, whose greatest depth is about 2,000 fathoms, runs continuously right up the centre of the two Atlantics, Tristan d'Acunha, St. Paul's Rocks, Ascension and the Azores showing as beacons on the way. Two other ridges join it, one from the African coast, S.W. to Tristan d'Acunha, and another short one from the coast of French Guiana, running northwards. On both sides of this long ridge lie deep depressions. The eastern one is continuous from where it plunges down from the Arctic plateau, to where the African ridge intercepts it. The continuity of

¹ This law is found working, too, in the extreme North Atlantic. There, at a depth of 390 fms. the bottom temp. is 30.5° , while 20 miles to the southward at a depth of 60 fms. more, the temp. is 42° . But in both places the temp. at 200 fms. is the same; therefore a ridge of that depth must divide these two basins. In Davis Strait the temp. at 930 fms. is 25° . Close to the Faroe Islands, the temp. is 29.5° ; but no colder water flows into the Atlantic from those regions than 34.6° —that of the Labrador current.

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the western one is broken by the Guiana ridge, thus forming two basins—the one confined to the North Atlantic and the other to the South Atlantic. It is this last one that includes that sounding which astonished us so much when under the equator—of all places in the world!—we struck for the first time ice-cold water.¹ This was near the head of a deep valley, opening from the Antarctic, and across which the ships sailed again—homeward bound—between Monte-Video and Tristan d'Acunha.²

You remember how—in a model—one theory explaining ocean circulation is carried out? If you get a long, oblong trough, whose sides are made of glass, and apply a lump of ice at one end, and, simultaneously, heat at the other (putting at the same time some blue-coloured liquid in the cold end of the trough, and some red-coloured fluid at the hot end, to show more clearly what takes place), you will see the blue water sink straightway to the bottom, and creep along there towards the heated end; and simultaneously, you will see the red coloured fluid, keeping strictly to the surface, flow towards the cold end. From both ends, then, water has been abstracted—from the one end by flowing along the bottom, and from the other by flowing along the surface, and each of these replaces the other, the cold by the hot flowing in from the surface, and the hot by the cold welling up from the bottom. And so it goes on continually.

It is a very pretty theory—in a model.

Granted then, in reality, sufficient polar cold, and sufficient tropical heat; the column of water at the pole being cold, and, therefore, its specific gravity being high, heavy; and the column of water at the equator being warm, and, therefore, its specific gravity being low, light; and the two, therefore, not being in equilibrium; well,

¹ Page 44.

² Page 473. Here was found a body of water 400 fathoms in thickness, 320 square miles in section, creeping northward, whose temperature was below freezing point. Contrast this with the Gulf Stream, only about six square miles in section!

motion must ensue, and in the manner described—so says one theory.

It is, as I have said, a pretty theory; and in the Atlantic oceans is represented by one long trough, having polar cold at *both* ends, and heat in the middle—at the equator. From this heated centre, warm surface currents flow N. and S., and their places are occupied by cold water, flowing from both poles, welling up from the bottom. When the surface currents reach their respective positions they in their turn sink. The *primum mobile*, always understood, being not so much tropical heat as polar cold.

But as in the Pacific we found the northern portion—furthest away from the Antarctic—*colder* at intermediate depths than the southern portion, this arrangement becomes in a manner reversible, conveniently. Instead of the *whole* of the bottom-water flowing from the Antarctic, welling up at the equator (as it does in the Atlantic), only a small part does so, and the rest keeps on flowing to the north along the bottom, till, there being no outlet, it necessarily occupies the whole area, the surface waters meanwhile flowing to the equator, and so southwards to the Antarctic, to make room for the cold, underflowing, intruder.

Thus the Pacific may, too, be represented as one long trough, in which, however, you have only polar cold at *one* end,¹ and heat, still, in the centre. Along the whole bottom of this trough, from S. to N. the cold water creeps in a body, a portion only detaching itself and welling up in the equatorial regions, while the rest flows on undisturbed, till, banking up, the upper stratum becomes warm, and flows back upon itself, past the equator, and joins the flow proceeding thence southwards on the surface.

The "Challenger" theory says No! to all this. As far as the Atlantic goes it denies that the Arctic currents affect

¹ Behring's Straits being only 40 fms. in depth, and a considerable part of that area being occupied by a warm current from the Pacific into the Arctic Sea.

materially the North Atlantic, which at once does away with the dual polar-cold system there credited by the other theory. But for several reasons—the lower barometric pressure and the *supposed* greater amount of rainfall in the southern sea, the higher specific gravity at the surface than at greater depths in the Atlantic, the higher specific gravity of the surface water in the Atlantic to the north than to the south of the equator—it is probable that the general circulation is kept chiefly up by an excess of evaporation in the region of the N. Atlantic, balancing a corresponding excess of precipitation over evaporation in the water (southern) hemisphere.

Referring to the tabulated temperatures of the Atlantic and Pacific oceans, you will notice the vast excess of warm water in the North Atlantic over every other ocean. This is due to the Gulf Stream. "In the equatorial regions it appears, that although the evaporation is very great, still the precipitation is also, as a rule, more than in any other part of the world, so that, although it may not be equal to the amount evaporated, it is still sufficient, in conjunction with the temperature, to prevent the surface film becoming denser than that below, so that the heated water remains on the surface. This surface water is, from the friction of the trade winds aided by the earth's motion, constantly being propelled, and known as the Equatorial current, to the westward, and meeting on the western side with an obstructing point of the South American continent is deviated to the northward, so that the greater part of this heated-surface film is forced into the North Atlantic with sufficient violence to cause a rapid current to issue from the Strait of Florida—known as the Gulf Stream (p. 21).¹

¹ Its representative in the Pacific, "the Japan current," is produced by precisely the same cause, the trade wind propelling another "Equatorial current." But, unlike that one of the Atlantic, the Pacific Equatorial current has a partial escape to the westward, and so the *return* current (*i.e.* the Japan current) is feebler, and its influence is sooner obliterated. To give you an idea of the speed of these ocean rivers: we found, in the Pacific, the North Equatorial current running to the westward 18 miles a day; and the South Equatorial current to the westward at an average

The salinity of this heated water is greater than that of the water beneath, so that, although from its temperature it is lighter while flowing northward than the subjacent layers, yet on becoming cooled from contact with the colder air, the density of this water increases, until a temperature is reached at which its weight is sufficient to cause it to sink; as this heated layer sinks it carries down its temperature, and so increases the temperature and density of the whole column of water in the temperate zone of that ocean."

Dredging, I may say without fear of contradiction, was our—the naval officers'—*bête noir*. The romance of deep-water trawling or dredging in the *Challenger*, when repeated several hundred times, was regarded from two points of view; the one was the naval officers', who had to stand for ten or twelve hours at a stretch carrying on the work, and who, always excepting that he did not like his day's work to have been done in vain, did not know much about, or *scientifically* appreciate, the minute differences between one starfish, one shrimp, one sea-cucumber, one sea-urchin, and another. The other point of view was the naturalist's, to whom the whole cruise was a yachting expedition, who had not to carry on the practical working of the dredge, to whom some new worm, coral, or echinoderm, is a joy for ever, who retires to a comfortable cabin to describe with enthusiasm this new animal, which we, without much enthusiasm, and with much weariness of spirit, to the rumbling tune of the donkey-engine only, had dragged up for him from the bottom of the sea.

Our trawlings and dredgings resulted in obtaining a vast number of invertebrate animals of every kind that

rate of 43 miles a day, the maximum being no less than 70. Between these two the counter Equatorial current was running to the eastward at an average rate of 30 miles a day, its maximum speed being 50. When (in the Atlantic) the Equatorial current was running at 0.75 miles per hour, it was running 0.4 miles at 50 fms., but at 75 fms. there was no current.

live in the sea, and of these many thousands of species are new to science. "The deep-sea fauna is by no means barren, but on the contrary, a fauna very remarkably constructed and comparatively rich, is universally distributed at even the greatest depths. The species found in the modern chalk-beds (*Globigerina ooze*) are except in a very few instances, not identical with those of the chalk, or even with those of older tertiaries. But although the species are not identical the general character of the assemblage of animals is much more nearly allied to the cretaceous than to any other recent fauna. The fauna of the deep-sea is wonderfully uniform throughout, whether in the middle of the Pacific, in either trough of the Atlantic, or in the southern sea; and yet, although in different localities the species are evidently representatives, to a critical eye they are certainly not identical." Generally speaking, life at the bottom is most abundant on the flanks of the land, down to about the depth of $2\frac{1}{2}$ miles. Beyond that the forms diminish in number and variety, being represented by only a few rhizopods, polyps, and echinoderms.

Over the whole of the "manganese area," (that is, on pure clay-bottom) we found the bottom fauna very meagre, but this may be accounted for to some extent by the nodules of manganese, which choked the net, and so prevented it from working properly.

"Glass-rope sponges"—*Euplectella* (Venus's flower-basket) *Hyalonema*, &c.—which are familiar to most people as being common in shop-windows, and which were supposed to exist only at two or three spots at the bottom of the sea, for the reason that they had only been caught there—off Japan, the Philippine Islands, &c.—prove to be the most characteristic inhabitants of the great depths all over the world, and with them ordinary siliceous sponges, some of which rival *Hyalospongiæ* in beauty.

Previous to our researches, no corals had been found at greater depths than about 1,000 fms. To this depth

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we have added 500 fms., where three genera¹ were found, while another universally distributed genus² we dredged from a depth of 2,900 fms. Of the first three, one occurs in the fossil condition in secondary formations, and the other two in tertiary; while the last one is not known in the fossil state, and the specimens from great depths are larger than those from shallow water. The greatest depth in which we ever found massive reef-forming corals,³ living, was at 30 fms., but there are other genera,⁴ which, though hardly deserving the name of reef-forming, occur in such quantities in similar depths, that they must considerably contribute to the formation of reefs.

Very interesting to science, too, is the fact that we have found the ordinary forms of sea-anemones living in shallow water, represented by closely allied species in great depths, though somewhat dwarfed in size. Thus one kind is found in shallow water at the Philippines under the full glare of the tropical sun, while another species of the same genus exists at three miles depth, where solar rays never penetrate, and the water keeps at freezing point. And of further interest is the fact that these specimens from the deep sea retain their vivid colouring. In this, however, they are not singular, for most deep-sea living creatures are coloured—some very brightly. Starfish, sea-urchins, and holothurians are coloured in many cases red and purplish; siliceous sponges pink, crustaceans usually blood red, while surface-living forms are often quite white and transparent. Blue-coloured creatures seem to be confined to the surface—light-loving; such as "Portuguese men-of-war," Velellas, Porpitæ, and Ianthinas—fragile floating shells⁵ of large size, and of a lovely violet colour.

I have in Chap. I. often mentioned how almost in-

¹ *Caryophyllia*; *Flabellum*; *Cryptohelia*.

² *Fungia symmetrica*.

³ *Heliastrea cavernosa* (convex form; measuring 2 ft. in diameter of flat base).

⁴ *Madracis asperula*.

⁵ "Fine shells" do not inhabit deep water; there, only a few small forms are found.

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variably the trawl brought up crustaceans. A large class was found to be inhabitants of the great depths—forms of the highest interest and peculiar to deep water. Some of these abyssal crustacea are quite blind. Species of crayfish were discovered so nearly allied to the fossil Eryonidæ, that it becomes doubtful whether a new genus should be established for them at all. One species was got only from very great depths, and another from shallow water, both, however, being blind. So then cousins of the famous Jurassic Eryonidæ are still living in great depths, where they are by no means rare. These deep-sea crustaceans are mostly of a bright-red colour. A gigantic ostracod was found in the southern sea, of such a size that it has but one known rival, and that a silurian form, found in the island of Gothland. Gigantic amphipods, and nymphoids, too, were discovered in great depths. One of these last measured two feet across the legs. So the conclusion drawn from these facts is, that in the deep sea, as well as in the sedimentary strata, animals are found which, compared with their relations living now-a-days, and in shallow water, are of a very considerable size.

The trawl was particularly prolific of fish, and upwards of 300 specimens of deep-sea forms were caught. Very many of these fish belong to species new to science, but no new family name has had to be invented for them. On the coasts of Italy and Madeira certain fish have been cast on shore at rare intervals, and eagerly sought after by naturalists, but so seldom are they found, although the fishermen know their value, that up to the time of our researches but little was known of their habits. Of these fish we found the *Macrurus*, or "grenadier fish," to be one of the commonest inhabitants of deep water, appearing usually from depths between 200 and 1,000 fms. In this family we have many species which cannot be referred to existing genera. These fishes are almost always blown out, and at times even burst when taken from the bag of the trawl. *Sternoptychidæ*, species of which, too

are sometimes washed on shore, and which are remarkable as having phosphorescent organs along their bodies, we found abundant in warm regions all round the world.

Of the *Scopelidæ*, "deep-sea salmon," the most remarkable forms have been found. Perhaps the most curious fish which we have obtained belongs to this family. Two or three species have the upper rays of the pectoral fins greatly elongated, these rays being in some cases much longer than the fish. These rays arch over the head, and simulate in a wonderful way some kinds of corals, or crinoids. We may suppose our mimicking friend to live among these at the bottom, where, erecting his pectoral fins, he lies *perdu*, till some unsuspecting shrimp comes near, and falls a victim to false appearances. Another very curious species is blind (apparently), but has on the top of its head a large white phosphorescent organ. Can this act as an eye? If so it will turn out to be the most wonderful eye in the whole vertebrate series of animals.

The *Ophidiidæ*, deep-sea cods, or haddocks, appear to live in deeper water than the *Macrurids*, as they are caught when the trawl sinks below 1,000 fms. One species is quite blind; another has its eyes represented by small black dots—similar to other fishes, but in this case seemingly rudimentary.

Stomiidæ are found universally in very deep water. Many of them have phosphorescent organs in long lines along their bodies. The deep-sea species are black, and one has a bright red spot at the angle of the mouth.

Of the *Pediculati*, or "sea-devils," or "fishing frogs," we found specimens in very deep water—one from so great a depth as 2,400 fms. The deep-sea forms are smaller, but otherwise very like those found in shallow water. Some have "fishing rods" or long filaments arching over their heads, and at the extreme end is a brightly phosphorescent star—to attract their prey? These fish have frightful mouths, with, for the size of the fish, enormous teeth.

Of the *Muraenidæ*, or long-billed "snipe-fish," numerous

specimens were got, as also of its relation, a deep-sea eel, which is found all round the world.

Deep-sea fish are all dark, or dirty white-coloured, but some have bright red or yellow spots. Many of their skeletons are quite soft.

At page 39, I have logged an unusually brilliant display of phosphorescence, and on that peg let me hang some general remarks on the subject as observed by the "Challengers." Phosphorescent light is, as you know, emitted by many ocean-living organisms. Some larval crustacea give out light from their eyes; some copepods intermittently from between the segments of their bodies; pyrosoma (p. 133) give out a steady lambent glow; salpæ, also, and medusæ; all zoophytes which live at the bottom are brilliantly illuminated;¹ and, as we have seen, fish² of several kinds are dotted along their bodies with phosphorescent organs; while a little infusorian has been

¹ I can't resist copying this pretty picture drawn by Prof. Sars, of what he found in the Northern Sea. "Forests of peculiar Cladorhiza, with tree-like branches, here deck the bottom for long stretches. Between the branches sit fast beautiful medusa heads and variegated 'fire-stars,' and various crustacea, and slow-moving Pycnogonida creep along between their branches, and with the help of their enormously-developed proboscis suck out their organic juices; a whole world of more delicate plant-like animals having at the same time fixed their dwellings among the dead sponges. In the open spaces between the sponge-forests creep along beautiful purple sea-stars, and long armed Ophiurids, together with numberless Annelids of various kinds, and round about swarm different sorts of Crustacea. Above all projects, like high mast timber in a coppice, the predominating Umbellularia (some, eight feet high) with their delicate straight stems and elegantly curved crowns set full of fringes of polyps. The light of day does not penetrate to these great depths, but as a compensation there is produced by the animals themselves a splendid illumination of the whole, inasmuch as almost all are strongly phosphorescent, or have the power to produce from their bodies an intense light, by turns bluish, greenish, and reddish."

² There is a small species of shark, of such light-giving power as to be named the "luminous shark." "The entire inferior surface of the body and head emits a vivid and greenish phosphorescent gleam, imparting to the creature by its own light a truly ghastly and terrific appearance. The small size of its fins would appear to denote that this fish is not active in swimming; and since it is highly predaceous, and evidently of nocturnal habits, it is not improbable that the phosphorescent power it possesses is of use to attract its prey, upon the same principle as torches are employed in night fishing."

credited with so great a light-giving power as to have won the name of *noctiluca*.

And that brings us to a "Challenger discovery."

What was it that on the night I have mentioned was the cause of that extraordinary phenomenon—the milky way, the glittering dust scattered in such profusion in the sea, as to literally illuminate the dark night air? The tow net was full of little round organisms, which at first glance were taken to be fishes' eggs, or perhaps *noctiluca*. But further study showed them to be diatoms—diatoms undescribed, and hitherto quite unknown to science, and so we christened them.¹ Diatoms of different kinds are universally present in the ocean, those which are found along the shores and in the Antarctic being very small, and their frustules chiefly composed of silica, for the secretion of which fresh water of low specific gravity is needful. But in the open sea these forms are replaced by others of gigantic size, and with a barely perceptible coating of silica. Of these, then, one is *Pyrocistis*, than which no ocean-living organism, whether plant or animal, is so abundant in the *warm* waters of the sea. Its phosphorescent light is emitted from a nucleus.

Noctiluca, on the other hand, is not found in the open ocean, excepting where the sea-water is, from river-water permeation, brackish.

If, therefore, when sailing over the ocean, particularly in the tropics, the phosphorescence appears *diffused*, such as I have described, be sure that the bright "cloud light" is caused by the diatoms, *Pyrocistis*, "bags of fire." And if when pulling over the waters of some harbour, or along the shore in whatever part of the world, the oars drip showers of stars, and the rippling wavelets, diverging wide from the bows, reveal their crests in running lines of mellowest light, as though a reflected moonbeam, sleeping had been disturbed, be sure, in this case, that *Noctiluca* infusorians chiefly are the cause. While, in either case,

¹ *Pyrocistis pseudonociluca*.

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those larger glittering sparkles are caused by larval crustaceans, flashing fire from wrathful eyes, or by copepods from between the joints of their bodies.

It is during a calm only that the teeming life of the ocean comes to the surface, and in such myriads that a large glass globe will appear as full of creatures visible to your naked eye as may a drop with animalculæ when seen through a microscope. And although daylight may no reveal distinctly to your unaided vision what the water contains, still, wait till dark, and then insert your hand, when brilliant light comes flooding, flashing out from the apparently empty water.

For it is, too, only when disturbed that many of these organisms give forth their light-giving property. You may be sailing along, seeing little phosphorescence—the crest of a wave breaking, a medusa floating by, the sparkles caused by the friction of the ship—but should a dolphin shark, or porpoise shoot swimming around you, lo! as water-fowl are sheathed in silver air bubbles, so are the fish sheathed in phosphorescent gold, cutting through the black water like lightning streaks. And thus it was on the night mentioned. The day had been calm, and up to the surface came floating and swimming all things that have life, and among these the diatoms, which happened to be in unusual abundance. Then fell the night, and with it rose the breeze, disturbing, as does your hand in the glass jar, the excitable organisms, and hence the wondrous display.

As the spectroscope is said to show that the band of light from phosphorus, oxydizing in the air, and the light from phosphorescent animals is the same, it has been suggested that the phosphorescent light from animals is due to the constant making and breaking of a phosphorescent compound in the organisms.

One unexpected result of our soundings has been to show the great depths surrounding coral islands. Bermuda, for instance, rises in conical form from a plateau three miles

beneath the surface of the sea, as high above this as Mont Blanc is above the sea-level. Every inch of the "still vex'd Bermoothes" is formed of calcareous wind-blown rock, an operation which is still going vigorously on. Here and there are seen banks of coral sand blown up from the beach, which continually increase, and increasing, push their way irresistibly along inland, swallowing up cottages, trees, and whatever else comes in their way. Thus has not only the land high above the present sea-level been formed, but this identical formation is found a long distance beneath it. Magnetic observations show Bermuda to have a central cone of iron-bearing rock, but no such rock can now be found, for even to a depth of 50 feet below the sea-level, there, still, is the sea-washed, wind-blown limestone present. Bermuda, then, appears to have once been a volcano surrounded by coral reefs. As the land gradually sank, so the lime-secreting polyps went on budding and building upwards on their dead kind, until the volcano disappeared altogether beneath the waves, when they covered entirely its sinking summit, still going on, as they are now, building and budding eternally, marking the site of the defunct volcano with a white and ever-increasing tombstone. Such, too, is the history of every purely coral island and atoll; and there may be many sunk far beneath the surface, carrying with them their white shroud of coral débris and dead calcareous shells.¹

Do you remember *Bathybius*? How in the soundings taken for the Atlantic Cable the mud brought up was found (supposedly) to be pervaded with organic matter, which, examined by the most eminent naturalists, was pronounced to have motion? This great discovery was named *Bathybius*, and was at once supposed to cover the whole bottom of the deep sea; this newly-discovered form of protoplasm, this "shapeless coat of living slime," this "physical necessity," this "physical basis of life," may perhaps be considered one of the greatest achievements of modern biology, and one of the richest in results." "Pro-

toplasm, then, in its most general and undifferentiated condition, in the form of a naked contractile mass of seemingly homogeneous jelly, is the substratum of all the life-movements of the lowest living things even in their adult condition. A structureless mass of jelly suffices for the display of all the vital phenomena of the lowest organisms," &c. And so one might go on extracting from the copious literature on this subject till a book was filled.¹

Well, it was reserved for the naturalists of the *Challenger* to expose *Bathybius* as a snare and a delusion. Says Mr. Murray: "In the early part of the cruise many attempts were made to detect the presence of free protoplasm in or on the bottoms from our soundings and dredgings, and with no definite result. It was undoubted, however, that some specimens of the sea-bottom preserved in spirit assumed a very mobile or jelly-like aspect, and also that flocculent matter was often present." This "coagulated mucus" answered in every particular, excepting, indeed, the most important one—want of motion—with *Bathybius* as described by the discoverers. On analysis, Mr. Buchanan found this to be sulphate of lime, which had been eliminated from the sea-water, always present in the mud, as an amorphous precipitate on the addition of spirit of wine. This substance consisted of sulphuric acid and lime; and when dissolved in water, and the solution allowed to

¹ But one more extract I must give you, it is so instructive. In "The Old Faith and the New," a Confession, by Strauss (who attempts to develop a cosmic conception, or system, which is to replace the old Christian idea and religion, but who found great difficulty in bridging over the space between the organic and the inorganic—between the living and the lifeless), will be found the following:—"But as, nevertheless, we see life at some time making its appearance for the first time in the course of the earth's development, what must our conclusion be, if not, that under quite unusual circumstances at the time of vast terrestrial revolutions the miracle, or apparition, of life—of course in its most rudimentary form—has actually 'come to pass?' The existence of this crudest form has since been actually demonstrated. Huxley has discovered the *Bathybius*, a slimy heap of jelly on the sea-bottom; Hæckel what he has called the structureless clots of albuminous carbon, which, although inorganic in their constitution, yet are capable of nutrition and accretion. By these the chasm may be said to be bridged, and the transition effected from the inorganic to the organic."

evaporate, it crystallized in the well-known form of gypsum, the crystals being all alike, and there being no amorphous matter amongst them.

Subsequent investigations led to the following results, which you have only to follow to see *Bathybius* :—When sea-water is treated with twice its volume of spirit or less, nearly the whole of the amorphous precipitate assumes the crystalline form in a short time. When treated with a great excess of spirit the precipitate remains amorphous, and assumes a gelatinous aspect, and this, when mixed with the ooze, has, under the microscope, the appearances so minutely described by Häckel. And, finally, ooze washed with distilled water, or examined just as it comes up, does not present any of those appearances which it does when treated with spirit. “When it is remembered that the original describers worked with spirit-preserved specimens of the bottom, the inference seems fair that *Bathybius* and the amorphous sulphate of lime are identical, and that in placing it amongst living things the describers have committed an error.”

THE END.

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